

A Scoping Study on Burundi's Agricultural Production in a Changing Climate and the Supporting Policies

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**THE KENYA INSTITUTE FOR PUBLIC POLICY RESEARCH AND
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AND

**UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA
(UNECA)**

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Foreword

Climate change and climate change variability is a threat to food production patterns, thus exacerbating food and nutrition insecurity across Africa. Therefore, tackling poverty, hunger and food security is a priority for the Africa Union Agenda 2063 which underscores the right of Africans to live healthy and productive lives. Further, the African Union has set a target to eliminate hunger and food insecurity by 2025 towards achieving the Sustainable Development Goal (SDG) 2 on ending hunger, achieving food security and improving nutrition. Unfortunately, Africa is not on track in meeting these targets mainly because the region is not producing enough food due to climate change and low adoption of technology. However, climate change has variable impacts on food production, with both production losses and gains across the region. As a result, regional trade is critical for facilitating the distribution of agricultural products to enhance food security in the region.

The East Africa Community (EAC) region is particularly vulnerable to climate change. The region is already experiencing increased climate change impacts, including extreme weather conditions, persistent drought, floods, and landslides and rising sea level which threaten food security and efforts to eradicate poverty. Despite the huge potential to produce enough food, the agricultural production system in the region is mainly rainfed, which consequently leads to high food and nutrition insecurity.

Finding solutions to perennial food security challenges in the EAC is crucial and urgent as climate change impacts intensify in frequency and severity. Looking beyond just agricultural production systems is thus critical in tackling this peril. Thus, there is need to apply other approaches such as the nexus approach which allows for evaluating integrative systems where, for instance, trade facilitates food security in a changing climate environment. Although agriculture production is vulnerable to climate change, food security is not necessary a result of low production but a combination of other factors such as poor food distribution caused by perverse subsidies and other trade barriers. The EAC has been able to attain a common market status, which could facilitate trade in the region and thus mitigate food shortages.

Despite the various measures and programmes adopted in EAC, some parts of the region continue to face food deficits due to restrictive trade policies and barriers to trade. Opportunities exist for adopting existing policy frameworks by member countries to address food security needs.

Preface

The project on Regional Assessment of Climate Change, Agricultural Production, Trade in Agricultural Production and Food Security in East African Community (EAC) was carried with support from the ACPC-CLIMDEV Work Programme. The ClimDev-Africa Programme is an initiative of the African Union Commission (AUC), the United Nations Economic Commission for Africa (UNECA) and the African Development Bank (AfDB). It is mandated at the highest level by African leaders (AU Summit of Heads of State and Government). The Programme was established to create a solid foundation for Africa's response to climate change and works closely with other African and non-African institutions and partners specialized in climate and development.

Over the last few years, our understanding and certainty about how climate is changing and the possible impacts this could have has grown immensely. This notwithstanding, agricultural production systems in the EAC region are highly vulnerable to climate change, consequently affecting food and nutrition security. The region is the most developed regional economic community (REC) in Africa, and cross border trade plays a critical role in facilitating food security. In response, the United Nations Economic Commission for Africa–African Climate Policy Centre (ACPC) is increasing its efforts to improve the capacity of EAC member states for mainstreaming climate change impacts in development policies, frameworks and plans.

The three-year project was launched in May 2014 covering Burundi, Kenya, Rwanda, Tanzania and Uganda. The activities carried in this study were linked to the ClimDev-Africa Programme work stream II, which focuses on solid policy analysis for decision support, and was spearheaded by the Kenya Institute for Public Policy Research Analysis (KIPPRA). The overall objective of the project was to assess whether or not agricultural production systems and trade policies in EAC can be adjusted to alleviate the impact of climate change on food security, and promote sustainable development. The project outputs include pre-project report, country scoping studies, indepth EAC studies on climate change, crop production model, economic policy and trade and finally a comprehensive regional report.

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The Economic Commission for Africa and KIPPRA would like to express their appreciation to all the government Ministries, State Departments and Agencies in Burundi, Kenya, Rwanda, Tanzania and Uganda for their active participation and providing the data and information used in preparing the report.

Executive Summary

Climate change will impact on agricultural production and productivity around the world and the agricultural sector will have to adapt to climate change in order to achieve global food security. The general consensus among experts is that agriculture is highly vulnerable to the increased frequency of severity and unpredictability of extreme weather-related events caused by climate change, which is manifested in hurricanes, droughts, floods, rising sea levels, among others. From the East Africa Climate Change Projections published by the International Panel on Climate Change (2007), Africa will warm up during this century and in all seasons. For East Africa, it's expected temperatures will increase by 3°C to 4°C from 2080 to 2099 period compared to the 1980 to 1999 period. Moreover, this will be followed by dryness across most of eastern Africa even though the projections for East Africa, point out an increase in rainfall for the same period.

Burundi agricultural sector is the main contributor to food security and contributes approximately 46% of GDP. Despite its importance, the sector is characterized by high production risks due to its over-dependence on rain-fed agricultural system. This makes climate change a threat to Burundi's food security.

There are several constraints in achieving food security in Burundi. The most challenging are the progressive atomization of farms resulting from high demographic growth, climate change as agriculture is dependent on rainfall and traditional farming methods with no or less investments. In addition, agriculture trades and prices are highly influenced by climatic patterns which negatively impact on food security and trade, market accessibility and affordability.

There are a number of policies governing agricultural production and food security in Burundi. However, a lot more needs to be done to implement or improve these policies. The inter linkages between climate change, trade and food security need to be addressed to create reforms that will improve a favorable environment for business. It is also important to address land issues and population increases which negatively affect food security. In Burundi 2025 Vision, the government will set up a voluntarism politics (policy) of control of demography by the elaboration of an aggressive strategy in partnership with socio-economic development actors. This is particularly with support of religious confessions, the civil society and NGOs. The information and education about family planning and reproductive health are the key points to be emphasized.

Agriculture in Burundi and in many countries in SSA depends on rains, and any change in weather affects agricultural production. Burundi has enormous potential for irrigation. However, the government does not have the means to provide the investment necessary to implement such initiatives. There is need for investment

as agriculture relies on rains. It is therefore imperative to mobilize substantial investment that can yield substantial and rapid results. This is especially when they are associated with community development activities that are based on lessons from successful experiences in the country and in neighbouring countries. There have been several adaptation strategies, such as supporting climate change adaptation initiatives and using effective weather forecasting technology. In the use of weather forecasting technology, the government should rethink and restructure the Burundian cropping system, taking into account climate change. Clearly, more data and projections at more sites across the country with such variations in climate and altitude are required to give a clearer picture of possible future conditions.

From the study analysis, water and soil resources are also essential for Burundi's economic and social development. Currently, these resources are under high stress from population growth, land use pressure and rising natural resource demand. Climate change and increasing climate variability may make the situation worse and further degrade the availability and quality of water and arable land.

Another important insight from the assessment is that Burundi has one of the most unfavourable business environments worldwide . Thus, the Government of Burundi has initiated and implemented reforms to improve the business climate. The new investment code offers attractive opportunities and guarantees the protection of investor's interests. However, a well-articulated trade policy is needed to promote sustainable economic growth leading to poverty elimination. Policy makers should enhance trade liberalization initiatives to stimulate exports, and therefore generate economic growth, increase incomes and greater capacity to access food by households.

The physical and economic access to the market is one of the limiting factors for food security in the family and at country level. The number of markets and infrastructure development as mentioned above also affect food security. The farther the market is, the more the food prices rise and the more the food security is affected. Most households are often forced not only to sell their crops immediately and at cheaper prices due to lack of storage and processing facilities, but also due to non-access to major markets. They then buy the same products after some time at much higher prices.

The non-tariff barriers in Burundi remain a serious concern for intraregional trade, especially customs and administrative procedures, including clearance formalities and the high number of institutions involved in control operations at the port in Bujumbura.

Abbreviations and Acronyms

API	Investment Promotion Agency
ARFIC	Autorité de Régulation de la Filière Café
BIF	Burundian Francs
BJM	Bujumbura
CAADP	Comprehensive Africa Agriculture Development Program
CC	Climate Change
CEM	Country Economic Memorandum
CET	Central European Time
CNTA	National Centre for Technology and Food Safety
COGERCO	Compagnie de Gérance du Cotton
COMESA	Common Market for Eastern and Southern Africa
CSLP	Cadre stratégique de croissance et de lutte contre la pauvreté (Poverty Reduction Strategy Plan)
DASP	Departing Australia Superannuation Payment
DFID	Department For International Development
DRC	Democratic Republic of Congo
EAC	East African Community
EC	Equivalent calories
EDS	Electronic Data Systems
ENAB	Enquête Nationale Agricole du Burundi
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	Agence Allemande de Coopération Internationale
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IDP	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IGEBU	Institut Géographique du Burundi
IMF	International Monetary Fund
INAPG	Institut National Agronomique Paris Grignon
ISABU	Institut des Sciences Agronomiques du Burundi
ISTEEBU	Institute of Statistics and Economic Studies of Burundi
KIPPRA	Kenya Institute for Public Policy Research and Analysis
MDG	Millennium Development Goals
MINAGRIE	Ministère de l'Agriculture et de l'Élevage
NAIP	National Agricultural Investment Plan
NAPA	National Adaptation Plan of Action

NAS	National Agriculture Strategy
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
OBR	Office Burundais des Recettes (Burundi Revenue Authority)
OCHA	UN Office for the Coordination of Humanitarian Affairs
OHADA	Organisation pour l'Harmonisation en Afrique du Droit des Affaires
OHP	Office de l'Huile de Palme du Burundi
OTB	Office du Thé du Burundi
OTS	Open Tender System
PAGE	Projet d'Appui à la Gestion Economique
PAIVA	Projet d'Appui à l'Intensification et à la Valorisation Agricoles
PAM	Programme Alimentaire Mondial
PARSE	Projet d'appui à la reconstruction du secteur de l'élevage
PDDAA	Programme détaillé pour le Développement de l'Agriculture Africaine
PIP	Plant Import Permit
PMS	Premenstrual Syndrome
PNIA	Plan National d'Investissement Agricole
PNSA	Programme National de la sécurité alimentaire
PRASAB	Agricultural Rehabilitation and Support Project
PRODEFI	Programme de Développement des Filières
PRSP	Poverty Reduction Strategy Plan
PTRPC	Transitional Program of Post-Conflict Reconstruction
RGPH	General Census of Population and Habitat
SDG	Sustainable Development Goals
SFPA	Strategic Framework for Poverty Alleviation
SODECO	Société de Deparchage de Cafe
SOGEAB	Société de Gestion de l'Abattoir Public de Bujumbura
SOGESTAL	Société de Gestion des Stations de Lavage
SOSUMO	Sugar Company of Moso
SPS	Sanitary and Phytosanitary Measures
SRDI	Société Régionale de Développement de l'IMBO
SSA	Social Security Administration
TBT	Technical Barriers to Trade
TPA	Trade Promotion Authority
UAE	United Arab-Emirates
UN	United Nations
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNICEF	United Nations Children's Emergency Fund
USA	United States of America
USAID	United States Agency for International Development
USD	American dollar

VAT Value Added Tax
WDI World Development Indicators
WFP World Food Program

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1. Introduction

Burundi is a small, landlocked country whose arable land is only 36%. The country is situated between 2.3°S to 4.5°S of latitude and 28.8°E to 31°E of longitude. It borders Tanzania in the east and south, Rwanda in the north and the Democratic Republic of Congo (DRC) in the west. Burundi covers about 27,834 km² of which 2,500 km² is lakes and 23,500 km² is potentially agricultural land. Its population was estimated at 8,060,000 inhabitants in 2008 (about 9.5 million in 2014). Agricultural households account for more than 90 per cent, and 51 per cent of the total population are women. The annual growth rate of the population is about 3 per cent and the population density was 310 inhabitants per km². The population density was, however, 400 inhabitants per km² in the provinces of the North and West (Ngozi, Kayanza, Bujumbura Rural, Muramvya) according to the General Census of Population and Habitat (RGPH) 2008. During the last decade, the growth of agricultural production (2%) was lower than the rate of increase of the population around (3%).

With a mean cultivated area of 0.5 ha per household, the farm has reached its limits as the main source of food and income. The decrease in the area under cultivation is indeed due to a continuous phenomenon of land subdivision. This arises from inheritance customs where every successive generation entitled to inherit land entails the division of the available land into many parts as there are heirs. Most farms have multiple scattered plots and many of them are tiny. These plots are not enough to ensure the food sufficiency of the population, given that the cultural system is also traditional, with low level technology, low utilization of modern inputs and inefficient resource allocations.

In Burundi, the food crops occupy 90 per cent of the cultivated area (approximately 1,210,000 ha) and contribute approximately 46 per cent of the GDP. The production of the primary sector results essentially from food crops consisting of basically four groups of crops: cereals, pulses, roots and tubers as well as bananas and plantains. The staple crops constitute the most important economic activity, although it is subjected to several constraints which reduce its performance significantly. Agriculture is the main foreign exchange earner, supplying up to 80 per cent of exports.

1.1 Climate Change, Agricultural Production, Trade and Food Security

Burundi has a moderate tropical climate with average temperatures of between 16°C and 25°C. In the western parts of the country where it is hotter, average temperatures are about 25°C. The country has two major seasons: the dry season

from June to September and the rainy season from September to May. The rainy season is made up of two parts: a short rainy season from September to December and a short dry season with frequent dry spells between January and February. From mid-February to May, there is a long rain season. The distribution of rains during the rainy seasons is irregular, with the highest amounts in the northwest. Dry seasons vary in length and there are sometimes long periods of drought. However, four seasons can be distinguished: the long dry season (June–August), the short wet season (September–December), the short dry season (mid-January–mid February) and the long wet season (February–May). Most of Burundi receives between 1,300 mm and 1,600 mm of rainfall a year. The Ruzizi Plain in the West and the northeast receives between 700 mm and 1,000 mm. In some areas, the amount of rainfall received during the short rains is more than that received in the long rains season (DfID, 2009). Agricultural production in Burundi is mainly rain-fed and the country's over-dependence on rainfall makes climate change a threat to food security.

According to the National Adaptation Plan of Action (NAPA), analysis of long term annual precipitation in Burundi reveals a cyclic character at intervals of more or less 10 years, with alternating periods of surplus followed by rainfall deficit compared to the normal. Analysis of the change of the average temperature shows a persistent rise in temperature compared to the normal. The average temperature in the region has increased from 0.7°C to 0.9°C since the year 1930 (NAPA, 2007).

Burundi has gone through many periods of climate related famine that are still engraved in the memory of Burundians (UNDP, 2005). These include, in particular, the famines in 1917, 1923, 1931, 1933, 1943 and 1958 nationwide, and 1989-1990 in the regions of Bujumbura Rural, Bururi, Gitega and Muramvya, and 2000-2005 in the North-East of the country. Some of these famines are a result of climate changes (dryness, excessive rains, hail) whereas others result from invasions by predator insects, including migrating grasshoppers and locusts.

Within the context of economies where Burundi is highly dependent on agriculture, both trade and climate change factors impact on food security. Climate change impacts on agriculture as observed during the famine in the North-East from 2000 to 2005 due to drought. Climate change affecting global food availability affects food prices (the inter-linkages between trade and climate change). Trade policies at the national and international levels can also impact on food security. Thus, Burundi is trying to enhance trade liberalization initiatives to stimulate exports, thus generating economic growth and increased incomes, and giving households greater capacity to access food.

However, despite the many initiatives of the Government of Burundi to increase agricultural production, there is need to assess the inter-linkages between climate

change, trade and food security to understand the interactions between climate change and agricultural production in order to create new policies and improve or implement in an efficient manner the existing ones.

1.2 Objectives and Scope of the Study

The objectives of this study are to assess national agricultural production patterns and trends with a focus on priority commodities to be assessed at regional level; and to assess the national trade patterns and trends in agricultural commodities and generate data and information to inform the regional analysis and modeling.

1.3 Organization of the Study Report

The first section of this study introduces climate change, agriculture production, trade and food security in Burundi and it also defines the objectives of the study. The second section will provide an overview of agriculture in Burundi, analyze the food security and nutrition situation in the country and highlight all the policies having a bearing on agricultural production and food security. In the third section, the study will review the trade regime in terms of its contribution to the GDP and the major commodities. It will also highlight all the policies that have a bearing on agricultural production and food security. The fourth section analyzes how climate change affects agricultural production and influences trade patterns. Finally, the fifth section will be devoted to conclusions and policy recommendations.

2 Agricultural Production

2.1 Background

The Burundi economy is based essentially on agriculture, characterized by a very high population (more than 90% of the total population) being dependent on smallholder agriculture, on increasingly scarce land (mean area per household of less than 0.5 ha) and with very low productivity. The total population was estimated at 9.5 million in 2014 (ISTEEBU Report) with an annual growth of 3 per cent and a very high population density (310 per km²).

Agricultural production is the main source of food and income. However, the small land per householder (0.5 ha) is one of the major factors contributing to food insecurity and less income. In addition, the area under cultivation is decreasing due to the continuous phenomenon of land subdivision arising from inheritance customs where every successive generation entitled to inherit land entails the division of the available land into as many parts as there are heirs.

In Burundi, agriculture contributed more than 46 per cent of the GDP in 2012 (World Bank, 2013) and is the main source of food for more than 85 per cent of the population. Agriculture production consists mainly of the basic products; essentially food crops consisting of four groups of crops: cereals, pulses, roots and tubers as well as bananas and plantains.

The staple crops constitute the most important economic activity. This activity is subjected to several constraints which significantly reduce its performance.

The constraints in achieving food security in Burundi are mainly:

1. The progressive sub-division of farms resulting from the demographic growth and from the weak availability of non-agricultural employment in rural and urban areas,
2. The soil's degradation caused by over exploitation and not accompanied with a measure to maintain or increase soil fertility and reduce negative effects of soil degradation,
3. The weak use of inorganic fertilizers in Burundi which contributed a lot to the recession of the agricultural return per capita in the region; what aggravates famine and under nutrition,
4. Limitation of organic fertilizer,
5. The weak intensification of operational systems,
6. Crop diseases,

7. Soil erosion caused by rains,
8. Exploitation of the marginal lands (very steep hillsides) and
9. Climatic changes.

Apart from providing food for the increasing population, agriculture is also the main foreign exchange earner, contributing up to 80 per cent of all exports. The main export crops are coffee and tea.

2.2 Volume of Production

Food crops occupied 90 per cent of the cultivated area (approximately 1,210,000 ha) and contributed to approximately 46 per cent of GDP in 2012. Most farms have multiple scattered plots and many of them are small. The sizes of farms are at the limit of productivity. The food crops include, in ascending order in produced volume (Table 2.1): bananas and plantains, tubers and roots (sweet potatoes, cassava, colocase, potatoes, yam), pulses (beans, peas, groundnuts, soybeans, cowpeas, cajanus cajan), cereal (Maize, rice, wheat, sorghum, barley), vegetables and fruits. The principal agricultural cash crops are coffee, tea, cotton and sugar crops. Coffee and tea have growing international markets.

Food production increased by 64.4 per cent in 2013 compared to 2012, thus increasing from 3,703,835 tonnes to 6,090,105 tonnes. The only group of crops which registered a decrease in production was some of the cereal crops. Since the Burundi agricultural system is mainly rain-fed, better rains and improved agricultural practices may be attributed to the improved production in 2013.

Table 2.1: Production (tonnes) of principal crops from 2000 to 2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cereals														
Sorghum	60,980	69,074	73,246	71,471	74,171	77,231	82,249	85,565	79,818	81,176	83,023	86,856	31,527	31,453
Maize	117,840	124,395	126,799	120,575	123,199	123,407	116,825	115,507	117,681	120,379	126,412	128,484	140,536	162,417
Wheat	6,097	8,667	8,290	6,873	7,493	7,756	8,007	7,987	8,094	8,583	9,034	9,789	4,196	6,423
Rice	51,678	60,920	62,648	61,256	64,532	67,947	68,311	70,911	74,492	78,432	83,019	91,415	64,620	41,454
Pulses														
Beans	187,437	248,934	244,649	230,241	220,281	214,206	208,951	205,196	189,661	202,934	201,551	199,072	205,944	225,003
Peas	29,787	33,174	33,330	33,091	32,819	32,755	33,242	32,557	30,938	37,316	31,532	31,222	16,719	23,132
Groundnuts													9,963	10,243
Soybeans													2,075	3,514
Bananas														
Bananas	1,513,997	1,549,164	1,602,979	1,759,917	1,586,536	1,615,653	1,607,452	170,0597	1,759,961	620,028	136,564	132,012	1,184,075	2,235,697
Roots and Tubers														
Irish Potatoes	24,939	27,319	27,994	26,338	26,091	25,534	26,290	26,693	28,900	10,615	9,320	8,838	47,841	122,904
Sweet Potatoes	687,382	780,859	833,470	807,934	834,394	866,605	837,311	873,663	90,0415	484,207	303,432	299,900	659,593	839,715
Yams	9,628	9,924	9,924	9,912	15,973	9,912	9,912	9,901	9,901	5,644	3,114	3,107	6,309	447
Colocase	80,734	84,700	85,705	61,136	61,703	60,786	58,248	58,125	58,341	44,502	18,480	18,317	92,973	136,186
Cassava	656,656	716,731	749,938	742,012	709,574	630,734	571,114	558,557	577,063	235,369	187,901	159,743	1,244,607	2,233,790

Table 2.2: Average yield (T/ha) of major crops

	Season	Total Production (Tonnes)	Area harvested (ha)	Yield (T/ha)
Rice	2011-2012	64,619	30,711	2.10
	2012-2013	41,456	21,670	1.91
Maize	2011-2012	140,536	101,421	1.38
	2012-2013	162,417	122,871	1.32
Beans	2011-2012	205,942	340,752	0.60
	2012-2013	225,004	338,130	0.66
Irish Potatoes	2011-2012	47,839	15,351	3.11
	2012-2013	122,899	19,743	6.22
Bananas	2011-2012	118,4076	178,036	6.65
	2012-2013	2,235,698	175,553	12.73

Source: (Reports, MINAGRI)

According to Table 2.1, in 2013, production of bananas was the highest (2,235,698 tonnes) followed by cassava (2,233,790 tonnes) and sweet potatoes (839,717 tonnes). Bean production (225,003 tonnes) was in 4th position and finally maize production was at 162,417 tonnes. Some crops such as wheat and yam registered low productions because they are grown in a few provinces whereas the other crops are produced throughout the nation. Rice production in Burundi is similarly inadequate to meet the country's consumption demand. The country imports rice from her neighbours although 90 per cent of her rice imports come from Asia (Pakistan and Vietnam) (USAID, 2010).

Agricultural production in Burundi is characterized by a decrease and very low yield per hectare. For example, in 2012, Burundi's bean production (205,944 MT – Table 2.2) was lower than 40 years ago in 1971 (284,831 MT) (Mcharo et al., 2011). This indicates a decline in the trend of bean production. Smallholder farmers in Burundi are constrained by severe shortage of arable land, food and nutrition insecurity, lack of appropriate crop varieties and poor agronomic practices (shortage of strong woody stakes for climbing bean varieties) (Mcharo et al., 2011). Table 2.2 also shows that while the potential yield for bananas is 40-60 tonnes/ha per year, for maize it is 5-7 tonnes/ha and for beans 2.5 tonnes/ha. The yield in Burundi is still very low at around 6 to 12 tonnes for bananas, 1.3 for maize and 0.6 T/ha for beans. Rice productivity is still also very low (2T/ha) against 5 T/ha as yield average for Asia (FAOSTAT, 2013).

2.3 Area of Crop Production

The high population density has led to the exploitation of the available arable land to the limits of agricultural possibilities. The arable land area is estimated at 1,351,000 ha. The actual area (season A, season B, season C) harvested was estimated at 1.2 million hectare for food crops in 2013 as indicated in Table 2.3.

Table 2.3: Area harvested of principal crops 2011-12 and 2012-13

Crops	2012	2013
Sorghum	53,523	48,291
Maize	101,421	122,871
Wheat	9,434	8,828
Rice	30,711	21,670
Sub-total cereals	195,088	201,660
Beans	340,752	338,130
Peas	5,524	5,561
Ground nut	21,673	23,130
Soy beans	2,849	3,678
Sub-total pulse	370,798	370,499
Bananas	178,036	175,553
Irish potatoes	15,351	19,743
Sweet potatoes	101,421	89,334
Yam	699	504
Colocase	14,397	17,727
Cassava	295,686	324,918
Sub-total root and tuber	427,554	452,226
Total	1,171,477	1,199,938

The big challenge for the government is to deal with population growth and increase the productivity as the available arable land is at the limit.

2.4 Agricultural Production System

The system of agricultural production is characterized by three seasons, namely:

Season A or Agatasi

This season runs from September to January. It is the short rainy season. The cultivated crops during this season are beans, maize, colocase, cassava, sweet potatoes, Irish potatoes, sorghum, rice and bananas. The production of this season represents, on average, a third of the annual production.

Season B or Impeshi

This season corresponds to the long rainy season which covers the period from February to May. It provides approximately 50 per cent of the total production. The crops cultivated during this season are beans, peas, colocase, cassava, sweet potatoes, wheat and Irish potatoes. Any change in rainfall affects the production of these crops at national level.

Season C or Ici

The crops from this season are grown in marshlands. These are beans, maize, sweet potatoes, Irish potatoes and rice. The season extends from June to September and provides approximately 15 per cent of the annual production.

Details on production for the main crops rice, maize, beans, Irish potatoes and bananas are discussed below.

a) Rice

The importance of rice as a crop is growing fast in Burundi. Rice production is carried out in the schemes in Imbo (Bubanza, Cibitoke), Moso (Ruyigi) and Bugesera (Kirundo, Muyinga). The sowing of rice in season A is done from mid-December to mid-January and in season C from mid-June to mid-July. Table 2.4 shows a disparity between the provinces. The highest production in the country is observed in the provinces of Bujumbura, Bubanza, Kirundo, Karuzi and Gitega with more than 3,000 tonnes and the low production observed is mainly due to less land under rice cultivation and cold temperatures.

b) Maize

Maize is grown in all agro-ecological zones in Burundi. It is cultivated in season A from September with the return of rains and in season C in the marshland from mid-June to mid-July. High production is observed in the provinces of Gitega, Kirundo, Rutana, Bururi and Muyinga with more than 10,000 tonnes per year mostly due to the favourable weather and the importance of the area under cultivation.

Table 2.4: Crop production by province (tonnes)

Province	Rice		Maize		Beans		Irish Potatoes		Bananas	
	2011-2012	2012-2013	2011-2012	2012-2013	2011-2012	2012-2013	2011-2012	2012-2013	2011-2012	2012-2013
Bubanza	8,749.0	4,863.0	6,653.0	7,317.0	5,073.0	4,331.0	76.0	110.0	17,131.0	40,400.0
Bujumbura	10,210.0	12,082.0	6,249.0	5,333.0	5,931.0	7,414.0	413.0	8,648.0	59,725.0	82,844.0
Bururi	744.0		11,193.0	12,694.0	9,446.0	9,340.0	2,549.0	14,479.0	57,858.0	95,471.0
Cankuzo	3,895.0	2,741.0	8,404.0	6,048.0	6,365.0	7,299.0	580.0	372.0	77,087.0	80,365.0
Cibitoke	2,307.0	1,053.0	7,240.0	6,759.0	6,899.0	5,686.0	34.0	172.0	92,103.0	149,546.0
Gitega	3,646.0	3,303.0	13,210.0	31,490.0	24,436.0	19,153.0	4,414.0	11,833.0	93,410.0	199,405.0
Karuzi	11,089.0	3,297.0	10,199.0	8,649.0	14,927.0	14,590.0	4,466.0	8,504.0	171,105.0	215,705.0
Kayanza	928.0	979.0	5,413.0	6,151.0	12,289.0	14,264.0	9,458.0	26,830.0	45,610.0	89,846.0
Kirundo	4,780.0	3,910.0	15,320.0	15,768.0	45,188.0	41,933.0	3,930.0	9,438.0	144,963.0	318,355.0
Makamba	4,998.0	1,175.0	5,981.0	9,681.0	10,889.0	8,714.0	3,584.0	1,218.0	25,323.0	90,704.0
Muramvya			4,854.0	7,019.0	8,047.0	8,525.0	7,875.0	18,016.0	36,639.0	101,239.0
Muyinga	3,118.0	2,142.0	12,187.0	11,770.0	23,402.0	16,536.0	2,707.0	4,859.0	139,651.0	273,692.0
Mwaro	55.0		6,515.0	7,693.0	6,750.0	7,873.0	1,679.0	4,296.0	49,102.0	60,593.0
Ngozi	2,935.0	2,384.0	4,401.0	6,332.0	19,419.0	16,927.0	3,868.0	10,259.0	88,880.0	249,518.0
Rutana	2,088.0	766.0	11,502.0	13,221.0	10,691.0	9,171.0	665.0	2,938.0	14,263.0	74,382.0
Ruyigi	5,077.0	2,761.0	11,215.0	6,492.0	15,252.0	14,186.0	1,541.0	927.0	71,226.0	113,723.0
Burundi	64,619.0	41,456.0	140,536.0	162,417.0	225,004.0	205,942.0	47,839.0	122,899.0	1,184,076.0	2,235,698.0

Source: MINAGRI ENAB 2012, 2013

c) Beans

Beans are a seasonal crop sown in season A in September, generally conditioned by the return of the rains when the land is wet. In season B, beans are cultivated in mid-February to mid-March. Finally, in season C in marshland, the period of sowing is mid-June to mid-July. High production is observed in Kirundo, Gitega, Muyinga and Ngozi (more than 15,000 tonnes). Kirundo Province contributes up to 20 per cent of the total production in the country. The favourable weather and the importance of the area under cultivation can also explain the disparities between provinces.

d) Irish Potatoes

Irish potatoes are cultivated in season A from mid-September to mid-October, in season B from mid-February to mid-March and in season C in the marshland from mid-June to mid-July. Kayanza Province production is more than the production in other provinces.

e) Bananas

The banana crop is long-lasting and is cultivated once a year at the beginning of the first rainy season. Bananas require three successive rainy months. The big difference between the two seasons may be attributed mostly to weather conditions (rainfall).

2.4.1 Agricultural inputs

Agriculture in Burundi is characterized by a very low level of input use, especially inorganic fertilizers. Farmers apply low inputs due to lack of financial resources. This is occasioned by low availability of loans arising from the weak development of rural financial institutions.

The use of inorganic fertilizer is very low, limited at 8kg per capita compared to the world average of 80kg. Inorganic fertilizers are out of reach for small farmers and are essentially applied to industrial crops (coffee, tea, cotton and sugar cane) and some other crops such as rice, Irish potatoes or beans. More than 85 per cent of householders (85.8% in season A, 89.3% in season B and 99.6% in season C) do not use improved seeds (ENAB, 2011-12). Ninety per cent of seed for food crops is recycled by the farmer from the previous season's harvest. The amount of improved and certified seeds produced remains small.

The use of pesticides is also low. The National Agricultural Strategy document indicates that pesticides used by farmers is approximately 10.9 per cent during season A, 5.5 per cent in Season B and 3.0 per cent in season C. Pesticides are sprayed mainly on coffee and tea, Irish potatoes and horticultural crops. The farmers have no knowledge of integrated pest and disease control methods.

2.4.2 Agricultural production technology

In almost all of the national territory of Burundi, farmers practice manual agriculture by using hand equipment such as the hoe, billhooks and axes. Agricultural mechanization does not exist because farmers have low income to get agricultural machines which are very expensive.

The area under irrigation is very low, about 1 per cent of the land under cultivation. This means that agricultural production depends on rainfall. Therefore, the impact of climate change on food production is mostly due to drought but from time to time, heavy rains can also reduce crop production.

2.5 Food Security

Food security is a concept that is a challenge to many stakeholders. Its implementation requires concerted action at all levels from the household responsibilities to those of the state. There exists interdependence between food security and development ideas regarding sustainable development and globalization. Food security problems require a multidisciplinary approach because they are often complicated. In Burundi as elsewhere in the region, food security is the subject of discussion in seminars, conferences and workshops to try to come up with effective solutions to the never ending food security problem. Useful parameters have been identified and defined, from availability to the stability of food in sufficient quantity and quality. Without achievement of food security, even development efforts cannot be realized. Food security exists when all people have, at all times, physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life. Often, food security is not given priority in many countries, hence each year many children die of hunger.

As is the food security situation in many parts of the world, it is evident that in Burundi with low production capacity and runaway population under unfavourable climatic, economic and political conditions, new coping strategies should be explored through research. Food security deteriorates year after year since climate smart adaptations are not made. This leads to the detriment of effective food security and sustainable development and environmental conservation due to:

- (i) conversion of fragile grazing areas to crop growing,
- (ii) the rural urban migration by males causing household vulnerability and loading women with more household and farm work,
- (iii) environmental degradation and also food habit changes that can cause food insecurity in both quality and quantity.

Indeed, Burundi is a densely populated country covering an area of 2,783,400 ha and, in terms of space, agriculture occupies an area equivalent to 1,351,000 ha (MINAGRI, 2008) of permanent arable lands. The population is currently more than 9 million inhabitants with approximately over 90 per cent living in rural areas and depending on agriculture and livestock under subsistence and primitive cultivation systems. The average density ranges between 310 and 650 people/km² while during the independence period this density could hardly exceed 100 inhabitants/km (Cochet, 2001). Arable lands are being subdivided into individual farmland. The World Hunger Index using data covering 120 countries in 2012 shows that Burundi is experiencing the highest rate of starvation.

The malnutrition rate for children under five years is high in Burundi. Thirty-nine (39) out of every 100 children weigh less than its normal for their age. Life expectancy at birth has improved from 40 years in the 1980s to 50-52 years in the 2000s. Although infant mortality rate declined from more than 250 cases per 1,000 births in the 1960s to fewer than 200 per 1,000 in the 2000s, it still remains very high. The main causes of death are malaria (40%) which mainly affects pregnant women, and children under five years, diarrhea (3%), acute respiratory infections (19%), malnutrition, and HIV/AIDS.

According to UNICEF, nearly two-thirds (around 58%) of all children under five years suffer from chronic malnutrition; one of the highest rates in the world. It is also important to note that 54 per cent of people live on less than US\$ 1.25 a day. The ranking based on the Human Development Index of UNDP placed the country at position 178 out of 187 countries. About 75 per cent of the national population (6 million people) suffers from hunger and food insecurity, and this suffering is widespread in the country (MINAGRI, 2008).

2.5.1 Components of food security

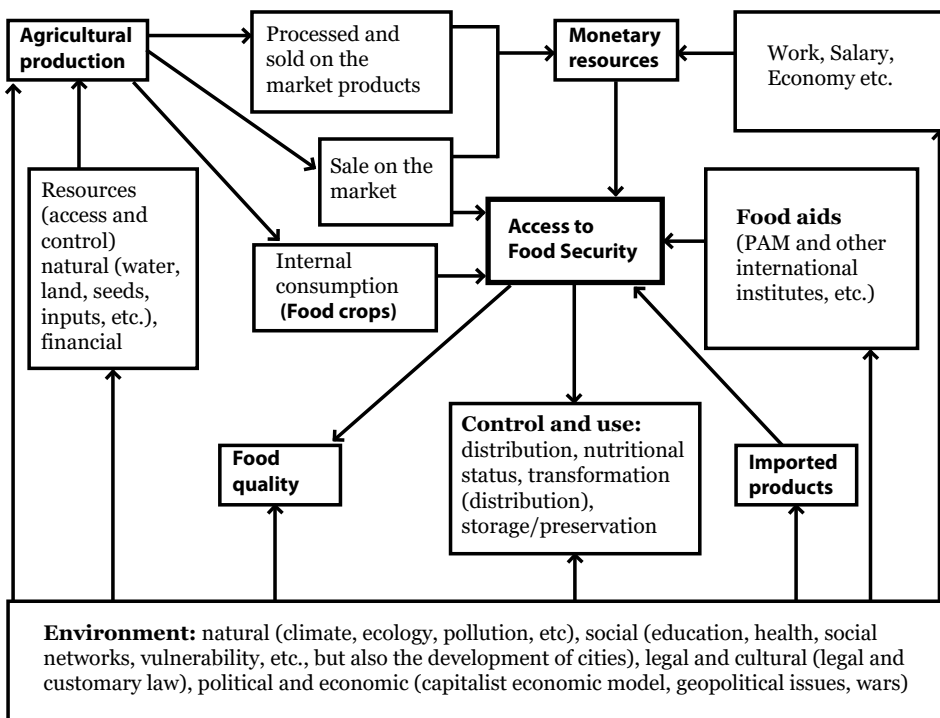
2.5.1.1 Food supply

Food production includes the production of food crops and livestock. In Burundi, industrial food production and processing is very limited and focuses on beer and soft drinks, and to a lesser extent sugar and cotton seed oil. Agricultural production is highly variable depending on the time of year and the geographic areas. Three growing seasons (A, B, C) can be distinguished as defined earlier in agricultural production system. But those seasons were disrupted by climate change observed through periods of rain or drought; these disturbances were felt from the 1998-1999 crop year up to date, and dealt a blow on agricultural production. With this climate change, a season step backward can be noted in such a way that if season A starts in mid-October it nearly reaches season B (MINAGRI, 2012 Report).

The national agricultural production is a result of a favourable environment (economic, natural, political, legal enabling environment and others). If the national food is not sufficient in quantity as in quality due to the above factors, it can be accompanied by imports and food aid as shown in Figure 2.1 below.

Figure 2.1 presents the relationship between food security, agricultural production, trade and the environment.

Figure 2.1: Diagram of food security



Source: Sophie Charlier, (2007)

2.5.1.2 Food Availability

Agricultural production depends on many factors such as resources (access and control), natural (water, land, seeds, inputs, etc), financial and natural environment (climate, ecology, pollution). Not only does it depend on social (education, health, social networks, vulnerability, etc) but also on the development of cities, legal and cultural (customary) laws, political and economic (capitalist economic model, geopolitical issues, wars). Apart from the importance of land in our regions, climatic factors greatly affect domestic production.

Among the factors influencing production, the most important is the land assets that are governed by laws as mentioned by Schlemmer (1995) in his book: "Earth

is the first and most important factor for food production and the fundamental element of symbolism through which describe social relations”.

Before the 1993 political crisis, the country was self-sufficient in terms of food; the food balance sheet was favourable. After 1993, the trend was reversed as indicated in Table 2.5. National production can no longer satisfy the growing population demand for food and cushion the country from the effects of climate change observed in the world. For instance, Table 2.5 shows the changes in the production of cereals, vegetables, roots and tubers, bananas and plantains during the five years before the crisis and years 2008 and 2009 (MINAGRI, 2010).

Table 2.5 also indicates that the productions of 2009, equivalent cereals have experienced significant falls (10%) compared to those recorded during the pre-crisis five years. Groups of cereals and pulses were the most affected while tubers and bananas have known improvements. This increase is due to the fact that the farmer is trying to adapt by changing to other crops that are more profitable.

In the last 15 years, the quality of the diet continues to deteriorate with a drastic decrease in the contribution of legumes (-41%), mainly beans, the main source of protein for the majority of Burundians. Currently, the diet is increasingly based on tubers (+7%) and bananas (11%).

Table 2.5: Statement of changes in production for the year 2009 -2008 and years 1988/1993 in cereal equivalent ('000 tonnes)

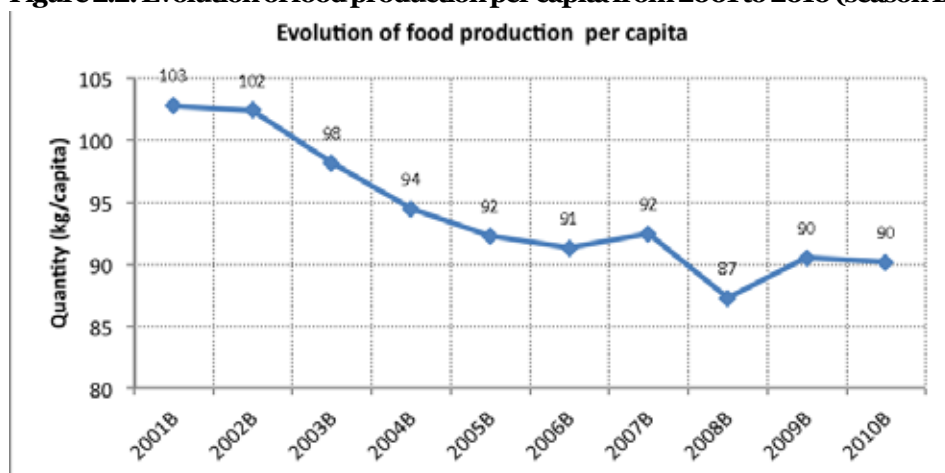
Crop group	Average production 1988/1993	Production 2008	Production 2009	Variation 2009/2008 (%)	Variation 2009/88-93
Cereals	298	287	284	-1	-5
Legume	369	222	218	-2	-41
Roots and tubers	450	486	482	-1	+ 7
Bananas & plantains	112	125	124	-1	+11
Total	1,229	1,120	1,108	-1	-10

Source: The report of crop assessment, food supply and nutritional status (saisonA2009) (The conjoint work of MINAGRI, OCHA, FAO, PAM and UNICEF).

Figure 2.2 illustrates the trend with regard to food security in Burundi. The output per capita is calculated by considering the total output of the agricultural season, representing domestic availability, relative to the total population size. By analyzing the production per capita of food crop production in the last 10

consecutive years, one notices a progressive decrease. This causes food insecurity production in families mainly due to the fact that the agriculture sector contributes 95 per cent of food supply to the population (MINAGRI, 2008).

Figure 2.2: Evolution of food production per capita from 2001 to 2010 (season B)



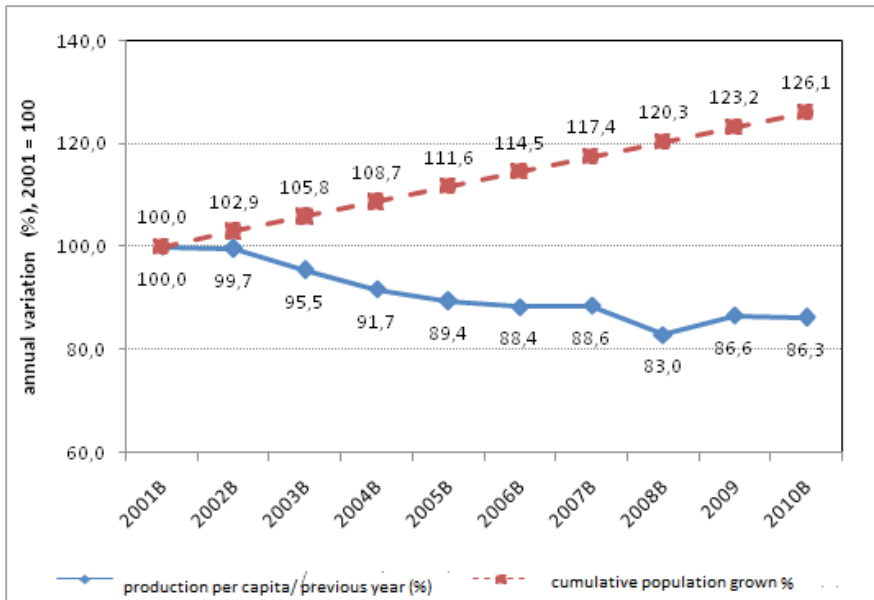
Source: the report of crop assessment, food supply and nutritional status (The conjoint works of MINAGRI, OCHA, FAO, PAM and UNICEF).

The poor performance of production due to climatic hazards and cassava mosaic is compounded by the increase in population to around 3 per cent per year and continually surpasses the growth of agricultural production as shown in Figure 2.3.

Season B in 2001 had been qualified as a very good crop production season, considering that the performance recorded for most crops improved due to the return of favourable weather conditions. By taking this season as reference (100%) of the level of the increase of the population, and that of agricultural production, Figure 2.3 shows the relative comparative variations between population and production.

While the cumulative population growth was inevitable in the last ten years, production in season B decreased until year 2008 and stabilized in the last two years, 2009 and 2010.

Figure 2.3: Comparison of the cumulative increase in population and per capita output (2001 B - 2010 B)

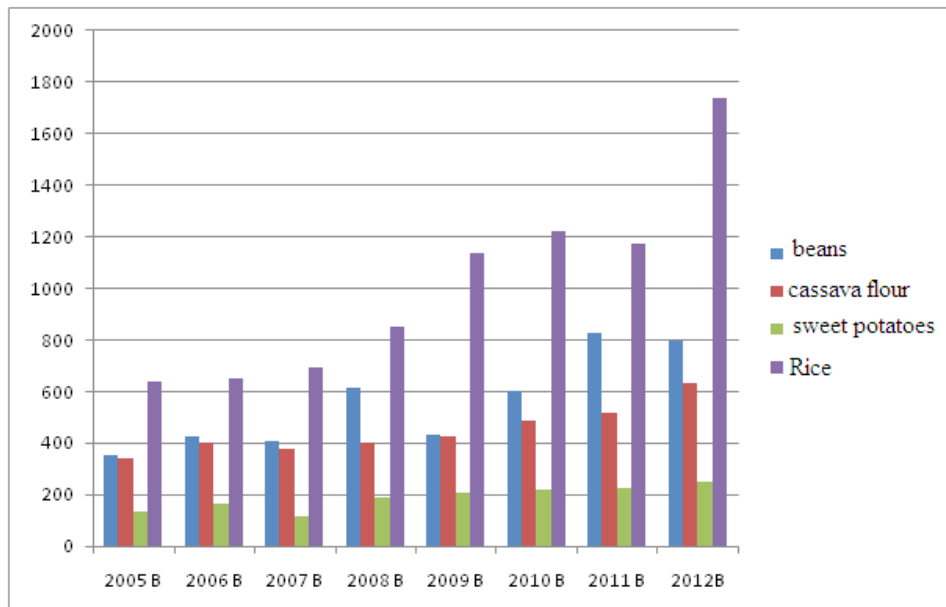


Source: (MINAGRI, OCHA, FAO, PAM and UNICEF), 2010

The mismatch between the population growth curve and the one of production results in the deficit of annual food availability per capita, deemed necessary to ensure a constant supply of individual daily 2,100 kcal (47kg per person per year of cereals; 52kg per person per year of legumes; 72kg (EC) per person per year of tubers; 19kg (EC) per person per year of bananas), which means a total of 190kg (EC) per person per year.

It is noted in Figure 2.4 that, before the 2004 season B, food availability per capita falls while exceeding the consumption needs per capita. However, from 2004 onwards, food availability was lower than consumption needs. This meant that the use of subsidies and imports became an absolute necessity between 2004 and 2010. The imbalance between production and food needs of the Burundian population has multiple causes as discussed in the following section.

Figure 2.4: Agriculture production and food needs per capita in Burundi (2001-2010)



Source: MINAGRI et al. (2010)

2.5.1.3 Access to food

Limited access to stock and market

The possibility of a Burundian farmer to store food is very limited due to inadequate infrastructure, storage and processing facilities.

A survey of food security has been conducted by WFP to assess food stocks at household level. In June 2012, the average length of stocks for six months was three months for pulses, 2 months for cereals, and 4 months for tubers and bananas. Disparities are important between regions of livelihood. Thus, the duration of reserves is particularly low in the plain area of Imbo Ridge, Congo Nile where agriculture is much more market-oriented.

Moreover, the reserve life is often perceived as estimated differently depending on whether the household anticipates a possible food shortage in the coming period with influence on the amount of meals. Estimated reserve duration may also be shortened in certain situations by other users such as sales and/or seeds, etc.

The physical and economic access to the market is one of the limiting factors for food security in the family and at country level. The number of markets and

infrastructure development also affect food security. The farther the market is, the higher the food prices and the more the food security is negatively affected.

The survey conducted by World Food Programme (WFP) shows that despite the high number of markets (98 provincial and municipal markets - excluding Bujumbura and Ngozi), access is limited to a certain number of households. The main markets are: Bujumbura, Mairie, Gitega, Ngozi, Makamba and Rumonge which are the main sources of supplies and transit for a large proportion of the products marketed throughout the country (WFP, 2007). In 2006, only 22 per cent of households had access to the nearest market being less than a 30 minutes' walk.

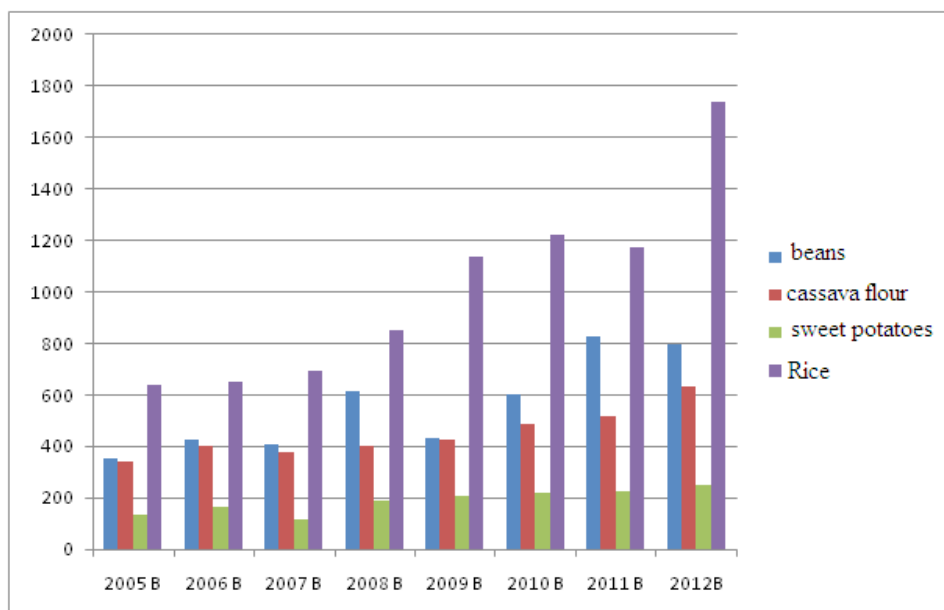
The physical market access constraints have a double negative effect on households. On one hand, there are difficulties in selling their production and, on the other, it means increases in food prices and agricultural inputs. This is due to the increase in the number of intermediaries. Moreover, some intermediaries benefit from speculation.

Most households are often forced to sell their crops immediately and cheaply not only due to lack of storage and processing facilities but also due to inaccessibility to major markets. They later buy the same products after some time at much higher prices.

Price Trends

Food prices of major foodstuffs in season B from 2005 to 2012 have grown steadily (Figure 2.5). The price of rice is almost three times more in 2012 than in 2005 while the price of sweet potatoes doubled over this period. From June 2010 to June 2012, the largest increases were recorded with 32.9 per cent for beans, 8.3 per cent for cassava, 70.8 per cent for maize, 88.3 per cent for rice and 52.7 per cent for Wheat (WFP, 2010-2012). In general, the continued rise in food prices was partly due to economic factors such as rising prices of certain products (oil), the food crisis affecting the entire sub-region in 2011 and the continued depreciation of the Burundian Franc. The continued depreciation of the Burundi Franc has a double negative impact to the consumer. On one hand, it means higher prices for imported commodities while on other hand, local commodities become cheaper for foreign buyers after exchange (e.g. food: Burundi rice is exported to Tanzania and Rwanda). In addition, several internal factors influence the increase of food prices, such as low levels of food stocks in households exacerbated by population growth, production losses related to weather conditions and the considerable reduction level of commercial imports as a result of restrictive tax measures applied by the Burundi Revenue Authority.

Figure 2.5: Trend of food price of major crops (2005B–2012B)



Source: MINAGRI (reports 2012) (conjoint works of OCHA, UNICEF)

2.5.2 Factors Limiting Food Security in Burundi

According to the MINAGRI report in 2008, the factors limiting food security in Burundi can be summarized as follows:

- i. Population pressure that generates land subdivision to uneconomical units and over-exploitation of land without measures to maintain soil fertility.
- ii. The small national average size of a farm by householders (0.5 ha). In addition, the decrease in farm size is unfortunately a continuing phenomenon due to the terms of inheritance. Each succession leads to division of the family available surface into as many parts as they are.
- iii. Over-utilization of forest resources and agro-forestry with worsening erosion on farms and watersheds is an area of concern directly affecting the status of food security. The annual rate of deforestation approaches 2 per cent of woodlands.
- iv. The wastage of water resources and their low valuation for irrigation of crops and the production of energy.
- v. Traditional systems of low production, inadequate mechanization aggravated by a lack of improved seeds and other production inputs with prices

more expensive for small producers. This is a consequence of insufficient technologies generated by research services and supervision, the low purchasing power of the population and of the soaring prices of improved production inputs. Fertilizer prices increased from US\$ 0.5 in 2000 to US\$ 1 per kg in 2008 while those of livestock nearly tripled.

- vi. Strong disease and pest pressure on major crops such as cassava mosaic virus, bacterial wilt, banana disease, strips of corn and anthracnose for Arabica coffee as well as livestock (swine for tick-borne diseases cattle, etc).
- vii. Weather conditions that affect agricultural seasons reduce yields and cause severe food shortages for some rural families.
- viii. Insufficient storage facilities, processing and marketing of agricultural inputs and products and animals.
- ix. Weaknesses of organization and capacity building of local communities to finance and manage their own development.
- x. A non-sustainable system of monitoring and prevention of nutritional deficient populations.

This complexity of the problems is the basis of scarcity and soaring food prices, which led the country to often turn to international food aid to feed some of its inhabitants. For example, in the first quarter of 2008, 17 per cent of the population needed such aid to survive.

2.5.3 Access to and control of resources related to food security

a) Land

This is a very important factor in agricultural production. It is the means and indispensable heritage of food security in Burundi where 90 per cent live on agriculture.

It has an economic, social and cultural value in the agricultural society and it is also the source of food and revenue for farmers. In Burundi and elsewhere in Africa where land is highly valued, it has become a socio-economic and political issue and is a source of rampant conflict.

b) Inputs

The availability of agricultural inputs is one of the determining factors to a successful crop harvest in a season. Their availability is dependent on the existence of the different sources of supply, having sufficient levels of these inputs, and farmers being able to get them on time. If inputs are well applied, they can increase

production up to and including doubling the yields. Inputs include mainly seeds, minerals, organic fertilizers and pesticides.

i) Seeds

Traditionally, most of the seeds and other planting materials are recycled from the farmers' own previous harvest with the exception of rice and potatoes for which the supply source remains the authorized producers. The institutions that produce improved seeds often sell to farmer support organizations such as FAO, PRASAB, PTRPC/IFAD that provide the same to farmers in the form of assistance to vulnerable households and associations of production.

The involvement of these organizations in seeds has been of great importance to farmers' access to the seed and planting material. The joint study by MINAGRI, FAO, OCHA in 2003, for example, showed that food insecurity reported in several provinces of the country affected by six consecutive months of dry season did not allow the majority of farmers to save seeds from the previous season (2002B) for planting in the 2003A season. Humanitarian organizations had to provide 201,840 vulnerable households targeted in all provinces with 2,018 tonnes of bean seeds, 674 tonnes of sorghum, 2,018 kgs of vegetable seeds and 120,670 hoes. Unfortunately, these inputs are often used as food or can be found in the market when rains delay planting.

ii) Minerals

The inorganic fertilizer based on nitrogen and phosphorus is a big challenge for farmers. The high cost and the new channel of supply and distribution by the private sector limits its use to the majority of the farmers. The price of fertilizer remains high across the country and in the last six years the price has nearly tripled instead of declining.

iii) Pesticides

The cost of pesticides is very high in Burundi. Even though the population is aware of how to use these necessary tools for agricultural production with good extension, its lower daily income 1,000 FBU (work labour) (MINAGRI, 2012) would not allow farmers to afford these inputs. This calls for a combined effort to raise the use of chemicals by both the government and other institutions responsible for food security in Burundi.

c) Cultural practices

Cultural practices also play a limiting factor in determining the level of national agricultural production. In Burundi, these practices limit agricultural intensification, for example. There is also a lot of time wasting, thus agricultural production cannot be competitive. Nevertheless, in Burundi, multiple intercropping and crop rotations are practiced by farmers to minimize the risks of disease.

The mixed agriculture-livestock farming system is one of the important factors towards improved food production, but it can only be practiced on land near the family “*rugo*”² due to lack of means to transport animal manure (Guichaou, 1995).

d) Imports of food

Due to the low production of food crops and the rapid population growth, reliance on imports and food aid is inevitable. For instance, in 2010, Burundi imported 43,700 tonnes of food compared to 40,100 tonnes in 2009 to address the cereal deficit equivalent to 491,000 tonnes (Estimated Food Balance Sheet for the last 6 months of 2010).

The main trade partners for imports of food products include Kenya, Tanzania, Uganda and Rwanda. Imported food consists of maize, beans, cassava (as flour), sorghum, rice and potatoes. These products are often non-registered (unofficial imports). The officially declared goods imports on the world market are mainly rice from Asia and wheat from Europe and America. All other reported products come mainly from the East Africa region (COMESA and EAC region - 33% of imports and 19% of exports).

Customs statistics for 2005 and 2006 indicate imports of less than 10,000 tonnes of equivalent grain. Imports under food aid totaled about 75,000 tonnes in 2005. The food aid was part of an emergency relief. Food aid has become an important factor in Burundi food supply and it helps address climate failures observed. The WFP plays an important role in food aid. Primarily, products that are imported comprise of legumes and cereals and are distributed freely. Since the onset of the crisis between 2004 and 2006, WFP imported nearly 70,000 tonnes of food per year. This assistance has declined steadily to 20,000 tonnes in 2011.

The analysis of the food balance sheet presented in Table 2.6 shows that:

1. The food offer constituted for the year 2010 is far below demand; 1.276 million against 1.767 thousand tonnes of EC (Equivalent Calories).
2. According to the data, the agricultural year 2010 has an overall food deficit estimated at 491,000 tonnes of cereal equivalent;
3. A low level of trade import is noted under the government of 50,000 tonnes of EC and a weak aid level expected only by WFP and established at 28,910 tonnes of EC aid;
4. An uncovered deficit of 412,000 tonnes of EC clears; that is to say 23 per cent of domestic needs including the needs of consumption and seed requirements for the 2011 season A.

² Traditional Burundian house. Normally when a Burundian says “*Rugo*” he is referring to everything that is found on his family compound.

5. The seed needs for the 2011 season A are estimated at 149,000 tonnes (corresponding to 13% cereals, 18% legumes, 10% of tubers and bananas).

According to the WFP, the agricultural year 2009 experienced an overall food deficit estimated at 546,000 tonnes of cereal equivalent; low import business under the government of 100,000 tonnes of EC and a low aid level expected only by WFP and established at 45,000 tonnes of EC aid; an uncovered deficit of 331,000 tonnes of EC.

Table 2.6: Food balance (in thousands)

Variables	Cereals	Vegetables	Roots and tubers	Bananas and plantains	Total
A. Interior availability (offer)	312	235	520	137	1,276
2010 A (estimation)	81	30	116	34	261
2010 B (estimation)	211	173	316	67	767
2010 C (projection)	20	32	88	36	176
Contribution of marginal crops (6% interior availability)					72
B. Total needs (request)	441	485	667	174	1,767
Foods uses	400	443	615	160	1,618
Seeds and other uses	41	42	52	14	149
C. Import needs (and EC): B-A	129	250	147	37	491
Anticipated commercial imports	30	20	0	0	50
D. Food aid needs	99	230	147	37	441
Needs covered by PAM	15	1,391	0	0	2,891
Total uncovered deficit (en EC)	84	21,609	147	37	412

Source: PAM reports

2.6 Policies Governing Agricultural Production and Food Security

2.6.1 Institutional setting

The mandate of the agricultural sector is the responsibility of the Ministry of Agriculture and Livestock. Its organization and functioning are governed by the 2006 decree. In carrying out the mandate and activities, the Ministry relies on the leadership of the Minister's office, four branches and 16 Provincial Directorates of Agriculture and Livestock (DASP). The staff of the Ministry was 1,901 in 2006 and increased to 4,510 in 2010. The Ministry also ensures the tutelage of three public institutions; ISABU in charge of agricultural research, the CNTA in charge of the promotion of technological innovation in agriculture, and ARFIC - a newly created organization responsible for ensuring the prerogatives of the State in the coffee sector.

The public slaughterhouse of Bujumbura was dissolved and ownership transferred to the SOGEAB (Société de Gestion de l'Abattoir Public de Bujumbura). Other parastatals were restructured as joint public private partnerships in the form of joint venture companies or public participation through savings. The new entities include SOGESTAL and SODECO in the coffee sector, COGERCO (Compagnie de Gérance du Cotton) in cotton, OTB (Office du Thé du Burundi) in tea, SRDI (Société Régionale de Développement de l'IMBO) for coaching rice producers in the plain of Imbo and finally the OHP (Office de l'Huile de Palme du Burundi) for coaching palm producers.

The Ministry is an institution that has an important role in poverty reduction and food security. Other important institutions operating in Burundi in this area include: IFAD, World Bank, FAO, WFP, OCHA, UNICEF, Catholic Relief Services and others, with the aim of supporting Burundi to achieve the objectives of the Millennium Development Goals aligned to the National Poverty Reduction Strategy Plan (PRSP). The PRSP supports the policies and programmes to achieve the aspirations of the countries. For instance, projects such as PRODEFI, PAIVA, PARSE and PTRPC under IFAD in Burundi and supported by PRSP participate in the promotion of agriculture to enhance agricultural production and make food safety a priority and to reduce poverty in rural areas.

2.6.2 Agricultural Production Policies

The approach in the formulation of agricultural production policy is based on Burundi's Vision 2025, the National Poverty Reduction Strategy Plan (CSLP), the National Agriculture Strategy (2008), the National Agricultural Investment Plan 2012–2017, and the Comprehensive Africa Agriculture Development

Programme (CAADP) (PDDAA, 2009). The Burundi Vision 2025 describes the basic development objectives of the country over a long term. The PRSP provides a vital role in the development of agriculture. Therefore, the agricultural sector has been identified in the PRSP as a key sector in boosting the national economy.

The main goal of the National Agriculture Strategy is supporting the agricultural sector to move from subsistence to market-oriented production. Agricultural production will be transformed into a commercial sector, with income-generation and employment creation. This will result in economic growth and increased food security.

The goal of the National Agricultural Investment Plan is to operationalize the National Agriculture Strategy. The Ministry drew up a series of ambitious physical and production targets to be realized under each sub-programme. One of the means by which agricultural production is to be boosted is the development of the commodity value chains of a number of agricultural enterprises. These are divided into the export group (coffee and tea) and the group of cash crops for the internal market (potatoes, beans, rice, maize, bananas, etc).

National Agricultural Strategy (NAS)

The National Agricultural Strategy (NAS) is based on the guidelines contained in the Poverty Reduction Strategy Plan (PRSP) and takes into account the MDGs, the CAADP of NEPAD member countries and the development policy for EAC and COMESA. NAS was approved by all partners in the agricultural sector in July 2008. It is engaged in four broad priority strategic areas, namely:

- i. Increased sustainable productivity and agricultural production;
- ii. Promotion of commodity chains and agribusiness;
- iii. Support for the professionalization of producers and development of the private sector;
- iv. Capacity management and development of the agricultural sector.

These four strategic areas are divided into several components, and the concrete actions to be taken.

The first priority is essentially restoring food security before the crisis (October, 1993), improving the nutritional status of the population, reducing household vulnerability and the effective rapid mobilization of emergency aid disaster.

The second focus is primarily the consolidation of existing industries and promoting new ones with a view to increasing the income of people; cash and foreign exchange savings for the country by diversifying sources of growth and

products export, promotion of import-substitution industries and the livestock sector.

The third strategic area concerns professionalization of producers and the development of private initiatives. It is essentially the organization, structuring and capacity building of producers in order to get them to actively participate in major decisions and professional involvement in the modernization of agriculture.

The fourth area concerns the revitalization, professionalization and decentralization of production support structures. It also aims to protect farmers against nutritional deficiencies and pandemics of malaria and HIV/AIDS. In addition, it aims to strengthen the capacity of the state to anticipate trends and market opportunities. The overall cost of the National Agricultural Strategy was estimated at 630 billion Burundian Francs.

Comprehensive Africa Agriculture Development Programme - CAADP

To halt the decline of the agricultural sector on the continent, African leaders pledged to implement in the context of New Partnership for African Development (NEPAD) a Comprehensive Africa Agriculture Development Programme. Its main aim is to restore growth, promote rural development and food security in Africa. The CAADP set the annual agricultural growth rate to at least 6 per cent. The Maputo Declaration also stresses the need to devote to agriculture at least 10 per cent of the national budget.

The Government of Burundi endorsed the Maputo commitment. It shows a willingness to improve the medium-term performance of the agricultural sector through actions already under way that are likely to improve economic growth and its sustainability. Among these actions are the drafting and adoption by all partners the Priority Actions Programme.

CAADP also fits through the pillars in the overall and specific objectives or strategic areas of the SAN. It is aligned through its pillars with the Regional Food Security Program for COMESA, whose objective is to improve the productivity and profitability of the agricultural sector, and to transform agriculture from subsistence agriculture to market-oriented production.

It also aligns with the Regional Food Security Programme of the East Africa Community (EAC) and aims to achieve sustainable growth and low cost of agricultural production and improving food security of the population.

National Agricultural Investment Plan

With the resolution of the crisis, significant gains have been made since the advent of peace but they remain far below the needs of the people. A lot remains to be done to get the economy up and reduce poverty and food insecurity. Agriculture has great potential and is rightly regarded as the main engine of economic development (Vision 2025 and CSLP). In addition to the productivity gains possible with improved knowledge and techniques, and the use of inputs, agriculture has enormous potential for irrigation. With the population growing at a rate greater than 3 per cent, there is a great risk that the vulnerability of a food insecure population worsens and the economy will regress if adequate investments are not implemented.

The National Agricultural Investment Plan (NAIP) is a framework of consistency and coordination of investment in the agricultural sector over the years 2012–2018. Its goals are to ensure food security for all, increase household income, earn foreign exchange, provide the material for the industrial sector and create jobs in the processing sector and related services to agriculture. The objective of NAIP is to operationalize the National Agricultural Strategy and the PRSP. It is in line with the commitments made by the government in the CAADP framework. The government intends to transform the current threat of food insecurity and transform Burundi to a net exporter of food.

Four programmes have been defined in the NAIP (Table 2.7):

1. Increased sustainable production and food security
2. Professionalization of producers and promoting innovation
3. Development of value chains and agri-business
4. Strengthening public institutions

Table 2.7: Programmes and sub-programmes of NAIP

P1. Increased sustainable production and food security	P2. Professionalization of producers and promoting innovation	P3. Development of commodity chains and agri-business	P4. Strengthening public institution
<ul style="list-style-type: none"> • Sustainable management of natural resources and water and soil preservation • Development and rehabilitation of irrigation schemes • Intensification of agricultural production • Development of fishing and fish farming Food security, nutrition and vulnerability management 	<ul style="list-style-type: none"> • Promoting farmers' organization and capacity building for producers • Development of local services and innovation • Strengthening Rural Financial Systems • Research/ Development 	<ul style="list-style-type: none"> • Development of Exports • Food and Animal commodity chains • Rural Infrastructure 	<ul style="list-style-type: none"> • Institutional strengthening and capacity building of the Ministry • Policy and regulatory framework for the sector and working conditions • Support to NAIP

NAIP has some major concrete targets such as 500,000 ha protected against erosion, marshland development and rehabilitation mid and high altitude (8,000 ha per year, about 48,000 ha), 5,000 ha new irrigated and 5,000 ha restored in the plains, Hillside irrigation of 3,000 ha in six years).

3 Trade in Agricultural Production and Trade Policies

3.1 Introduction

Burundi is primarily an agricultural nation. Agriculture (encompassing subsistence farming, livestock raising, fisheries and forestry) preoccupies 90 per cent of the total population, producing on average around 45 per cent of the GDP and 95 per cent of food supply, and accounts for 95 per cent of the total export earnings. Coffee is the principal export, followed by tea.

Burundi is striving to diversify the economy by reducing the vulnerability of the agricultural sector to shocks and by putting in place strategies aimed at strengthening good governance and anti-corruption practices.

The secondary sector, accounting for about 15.8 per cent of GDP in 2010, is rudimentary and mainly serves the domestic market. The tertiary sector (services), representing around 35 per cent of GDP, has displayed burgeoning growth since 2000, particularly in the mobile telephony segment. Burundi relies heavily on the external sector, and the value of its trade in goods and services is approaching 60 per cent of GDP. It has had a balance-of-payments deficit since 2000, which grew from US\$ 5.7 million in 2005 to US\$ 300.9 million in 2010, corresponding to around 20 per cent of GDP.

The establishment, in 2009, of the OBR (Office Burundais des Recettes, Burundi's Revenue Authority) has helped increase revenue and, as a result of the automation of the expenditure chain, the integrated public finance management system has improved the monitoring of expenditure execution and enhanced transparency in public finances.

In 2010, exports and imports of goods accounted for 9.1 per cent and 48.8 per cent of GDP, respectively. The exports and GDP ratio fell during the second half of the 2000s, whereas the imports and GDP ratio grew rapidly, giving rise to an on-going trade deficit which reached US\$ 300.9 million in 2010, corresponding to 20 per cent of GDP. The resulting current account deficit has been partially financed by the increase in foreign aid flows, which averaged around 17.7 per cent of GDP between 2008 and 2010.

The EAC has become an increasingly important region for Burundi's exports since 2001, well before Burundi joined the Community. Exports to and imports from the EAC have increased rapidly over the past decade.

The shares of total exports going to Rwanda (5.6%) and Kenya (9%) have been stable but the shares going to Uganda and Tanzania have increased during the decade (from 0.9% and 0.3%, respectively, in 2004 to 2.4% and 1.5% in 2010).

The main exports from Burundi to the EAC include hides and skins (around 25%), raw sugar cane (20%), ferrous scrap (17%), coffee and tea (8%), and soap (5%).

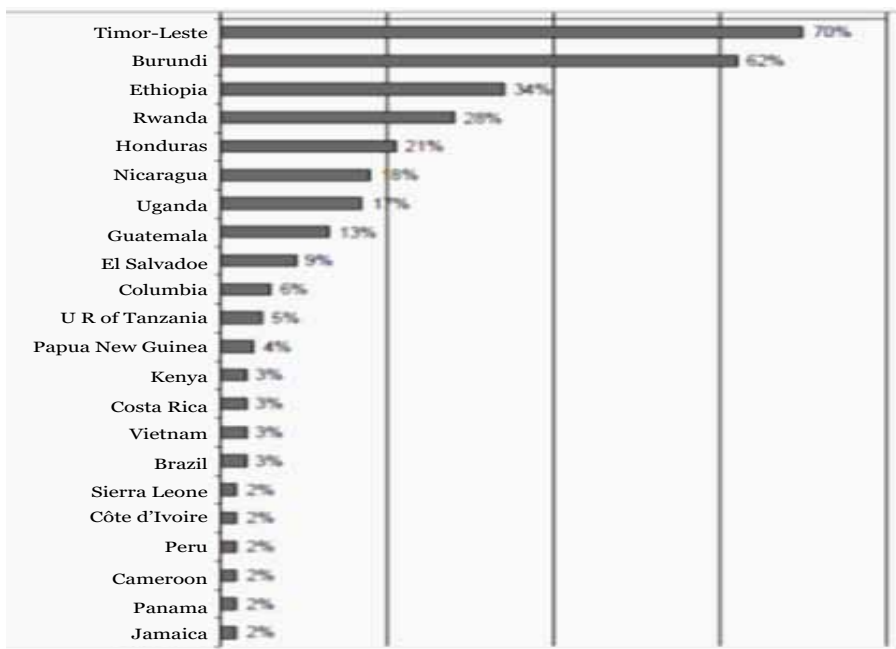
The government has begun some reforms addressing, for example, coffee liberalization, the business environment and public financial management. Key reforms are the ongoing liberalization of coffee, a new investment code, revision of the mining code, the adoption of a new privatization law, the establishment of the new Investment Promotion Agency (API) and better public financial management based on a new organic budget law. The next steps are critical in adopting the revised mining code, adopting the revised commercial code and finalizing the revision of the tax code. Regarding public finance reforms, the size of the wage bill remains a concern.

3.2 Trade in Agricultural Production

Burundi's very narrow export base (averaging only about 10% of GDP) has not changed notably in the last 20 years. Compared to most of the other EAC members, Burundi has a relatively high level of export concentration. The economy is highly dependent on primary products, predominantly coffee followed by tea. The country's export structure is characterized by very low use of technology. Burundi has been only partially successful in introducing high-value primary products, such as cut flowers, thus the income potential of Burundi's export basket remains low.

Burundi's export base is very limited and undiversified mainly because of the stagnation in agriculture. Because of the low diversification, Burundian export incomes are volatile and vulnerable to external shocks such as bad weather and quantity or price shocks. Coffee is the main export product of Burundi and accounts for 62 per cent of its export value (Figure 3.1) and 90 per cent of its foreign exchange earnings (Vandorpe, 2013).

Figure 3.1: Share of coffee in total export earnings 2005-10



Source: ITC, 2012 cited by Vandorpe (2013)

The expansion of coffee faces severe challenges. Some 600,000–800,000 households (perhaps one-third of the population) grow coffee. Though Burundi's climatic conditions are favourable to producing high quality, high value coffee, the sector under-performs with declining production and quality partly because of inadequate official support, which does not stimulate production. Unlike Rwanda, Burundi has been slow to match the latest developments such as the increased importance of specialty coffees or the marketing of high quality coffee.

Imports play a major role in the Burundian economy. The country imports a wide variety of goods, with manufactured goods representing about two-thirds and fuel about 15 per cent of Burundi's import goods. The import composition largely reflects the lack of a domestic manufacturing industry and fuel resources as well as the limits of a small domestic market that prevents achievement of economies of scale.

As shown in Table 3.1, retail market prices for selected food commodities have been gradually increasing in Burundi. The average retail market price for a kilogramme of beans increased from US\$ 0.36 in 2002 to US\$ 0.82 in 2012. Similarly, other food commodities such as rice and maize flour showed increasing trends in market prices.

Table 3.1: Retail market prices for selected food commodities, US\$ per kilogramme

Food crops	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Beans	0.36	0.34	0.36	0.50	0.54	0.65	1.00	0.97	0.83	0.82	0.82
Rice	0.50	0.49	0.58	0.65	0.72	0.67	1.00	0.92	0.87	1.04	1.08
Maize flour	0.39	0.31	0.35	0.43	0.46	0.47	0.49	0.42	0.44	0.66	0.71

Source: EAC (2013)

As a small, landlocked country, Burundi faces significant difficulties and costs in accessing global markets. High trade costs, poor infrastructure and under-developed service sectors limit Burundi's ability to attract Foreign Direct Investment (FDI), develop competitive higher-value for export and pursue export-led growth. The internal obstacles are compounded by the high costs in the ports of Dar es Salaam (Tanzania) and Mombasa (Kenya), through which Burundi trades. The following factors can further explain Burundi's poor trade performance (Dihel, 2011):

Firstly, Burundi has one of the most unfavourable business environments worldwide. The World Bank's 2013 Doing Business survey ranked Burundi at position 177 out of 185 countries surveyed in their Ease of Doing Business Ranking. Being near the bottom, Burundi was assessed relative to other countries in the areas of dealing with permits, getting credit, protecting investors, trading across borders, and enforcing contracts.² Another cross-country assessment of business conditions ranked Burundi at position 133 out of 133 countries surveyed in its Global Competitiveness Index. Survey respondents highlighted corruption, political instability, inefficient government bureaucracy, crime and theft among their top concerns.

Secondly, the private sector in Burundi faces several major constraints. The Burundian private sector is under-developed - it includes a large number of small enterprises - and mostly operates in the informal sector. Furthermore, Burundi's economy is dominated by public enterprises, several of which face financial problems.

Thirdly, the financial sector is small and not well developed, and access to finance is a major obstacle for companies in the formal and informal sectors.

² According to data collected by Doing Business 2013, exporting a standard container of goods requires 10 documents, takes 32 days and costs US\$ 2,965. Importing the same container of goods requires 11 documents, takes 46 days and costs US\$ 5,005 (see the summary of procedures and documents in Doing Business 2013 for details).

Fourthly, lack of infrastructure raises the costs of Burundi's isolation. The country lacks roads, bridges, ships, railways, power, communications, water and sanitation. The poor coverage and state of infrastructure increases costs (time and money) that lower the return on investment, discourage domestic and foreign investment, and constrain economic growth. High transport costs, caused by the absence of infrastructure, hinder internal trade and reduce Burundi's trade opportunities with East Africa and the rest of the world.

Finally, the limited availability of skilled workers and the low productivity of labour is another factor that explains Burundi's poor export performance.

3.3 Agricultural Strategy and Investment Plan

Burundi is emerging from a long socio-political crisis. Ten years after peace accords were signed, its economic situation is still precarious, with an annual per capita GDP of US\$ 110 and poverty affecting more than 65 per cent of the population. The food and nutrition situation is particularly disquieting, with an overall cereal-equivalent deficit of close to 470,000 tonnes per year and more than 70 per cent of the population suffering from food insecurity. All the social indicators are at low levels. Most Millennium Development Goals could not be achieved and urgent action is needed to increase agricultural production and thus prevent food insecurity from being added to the other sources of social tension.

Burundi is the second most densely populated country in Africa (with 8.5 million inhabitants and an annual growth rate of 2.9 %) and is one of the five poorest countries in the world. It is classified 166th out of 169 countries in terms of the Human Development Index. Nearly 70 per cent of the population lives below the poverty threshold (on less than a dollar a day per inhabitant). Rural inhabitants are the most severely affected by poverty and food insecurity. In the absence of a census, it is estimated that more than 95 per cent of the population works in the farming sector because of lack of jobs in other sectors of the economy. Most of the poor are small farmers (with less than 0.5 hectares) who depend on food crops; a situation that applies particularly to women farmers who are household heads. Their poverty is largely linked to low agricultural productivity, resulting mainly from the following factors: the small size of farms, demographic pressure, a fall in soil fertility, the absence of equipment and technical and financial capital, incapacity to obtain inputs (quality seed, fertilizer, etc.) and low level technical knowledge. Rural poverty has increased greatly as a result of the fall in agricultural production following the crisis, prolonged droughts in recent years and the disorganized state of marketing channels. Climate change has become a constraint to be reckoned with on a regular basis to such an extent that there is

now an urgent need for the agricultural policy to include a definite orientation towards the mobilization and sound control of water resources to compensate for irregular rainfall. In addition, a decline in farm-gate prices estimated at 35 per cent has severely affected small farmers growing cash crops, particularly coffee, tea and palm oil. Repatriation and reintegration also exacerbate the problem of access to land, while the massive arrival of repatriated people has also placed heavy pressure on the absorption capacities of socio-economic infrastructures that were already far from adequate.

The gravity of the food situation can be seen from the figures produced by WFP, which indicate that 70 per cent of the population is living with food insecurity, while UNICEF's figures indicate that 35 per cent of children under five are suffering from being moderately to severely being underweight.

Burundi's agricultural sector policy is laid down in the national agricultural strategy document adopted in 2008, which takes into account and follows the guidelines and priorities of the country's basic strategic documents, particularly Outlook 2025 and the Strategic Framework for Poverty Alleviation (SFPA). Complementary sub-sector strategy documents have been drawn up over the past two years (for livestock production, marshland development, catchment area protection, etc.), together with a National Food Security Programme and a plan of action for the national agricultural strategy. Despite these major efforts and until inception of the Comprehensive Africa Agriculture Development Programme (CAADP), supported by the Common Market for Eastern and Southern Africa (COMESA), the national agricultural strategy was not yet an adequate analytical framework for decision-making regarding investments and did not include an operationalization mechanism that would allow the planning of actions and resources. With the impetus of the CAADP, the government then set about drawing up a National Agricultural Investment Plan (NAIP) covering the period of 2012-2017, parallel and fully integrated with the SFPA2, with the participation and contribution of all the technical and financial partners. The NAIP was developed with the support of COMESA and technical and financial partners, by a national technical team assisted by a group of international and national consultants and in close consultation with civil society and grassroot community organizations. It was validated in June 2011 during a workshop attended by all the stakeholders in the agricultural and rural world and later approved by the government in July 2011.

With a view to implementing the NAIP, the government plans to mobilize the necessary human, financial and institutional investments. So far as financial investment is concerned, the government intends to mobilize its own resources, in line with the resolution of the Summit of Heads of State and Government of

the African Union (Maputo 2004), and allocate a greater part of its budget to the agricultural sector in order to achieve or exceed the recommended 10 per cent from 2012 onwards. In 2011, the agricultural sector's share in the national budget reached 6.8 per cent. There are also efforts that have been needed to draw up a high-quality NAIP that is both realistic and feasible and will encourage the raising of external resources (particularly from technical and financial partners). The process of resource mobilization was successfully launched in March 2012 with the organisation of a Business meeting held in Bujumbura on 14 and 15 March 2012. So far as institutional and human resources are concerned, the government has undertaken to mobilize its senior and technical staff within the Ministry of Agriculture and Livestock that has been revamped through a thorough, ongoing reform of its structures so that it can respond better to the demands of its mandate. This reform is intended to act as the basis for Programme 4 of the NAIP.

The NAIP lays emphasis on the increase in crop and livestock production by raising productivity and ensuring optimal management of soil and water resources. It also emphasizes on the strengthening of human resource capacities of national institutions and farmer organizations in the areas of organization and management with an emphasis on women and the importance of their role in agricultural sector development. It will be coordinated with the other ministries to address such common issues as land tenure and environmental problems, the development of infrastructure, and factors linked to marketing and the development of agribusiness.

The NAIP is organized into four programmes and 15 sub-programmes. The four main programmes are:

1. Sustainable growth in production and food security
2. Professional training of farmers and promotion of innovation
3. Development of value chains and agribusiness
4. Institution-building for public bodies

The main objective of the first three programmes is to bring about an increase in production and a reduction in poverty and food insecurity.

3.4 Key Elements of the Policy Environment

Burundi's economy is based essentially on subsistence farming with a preponderantly agricultural population (more than 95% of the total population), a fragmentation of farms (with an average size of less than 0.5 hectares) and very low productivity. Over the past ten years, the growth rate of agricultural production (2%) has been less than the growth rate of the population which is between 2.6 per cent and 3 per cent. The SFPA 2 lays particular emphasis on this sector and on measures and reforms to be implemented with a view to creating a favourable climate for its development.

The Government of Burundi has undertaken reforms to improve the economic situation. Measures adopted with IMF support have led to an improvement in fiscal performance (increased revenue and controlled expenditure). Application of VAT has simplified the taxation system. The monetary policy adopted by the government has led to a certain stabilization of prices, while also protecting the economic recovery from outside shocks. The public market code has been revised to facilitate public market procurement and bring procedures in line with those of the various technical and financial partners. The privatization programme is barely moving forward, although the government is persisting with it.

With the support of the World Bank, and following the various missions, the government has undertaken the establishment of a results-based strategic planning system. The system encompasses the SFPA as a strategic framework, the Priority Action Programme as three-year planning framework for the ministries' activities, and the Medium-Term Expenditure Framework as budget framework instrument regarding the needs of the Priority Action Programme. It also encompasses a system to monitor the execution, results and impact of actions. Activities to implement the Medium-Term Expenditure Framework will thus go hand-in-hand with those to boost sector strategies and priority action programmes and establishment of the performance monitoring system.

The government has undertaken a wide-range programme of institutional reform. With regard to the agricultural sector, the Ministry of Agriculture and Livestock is not currently in a position to supervise and support the development of the sector. The inappropriate nature of its organization and style of operating prevents it from effectively carrying out the new tasks it is responsible for under the poverty alleviation strategy and the agricultural sector strategy. Considering the many challenges facing Burundi, particularly as regards food security, a revision of the Ministry's organization and style of operating is vital if its performance and effectiveness are to be improved. The government has sought to revise the ministry's organizational chart to adapt it to the new orientations of reducing

poverty and food insecurity. Action to reorganize the Ministry was launched in February 2009, leading to a new organizational chart. It should allow re-evaluation of its planning, monitoring and evaluation functions, better coordination of its central and decentralized services, better human resource management and a broad capacity-building programme for field staff and services. In general terms, however, the interventions do not address the critical points of the make-up of the Ministry (staff), its modes of intervention (consultation, devolution, support for decentralization, etc) or an improvement in the working conditions of its field staff.

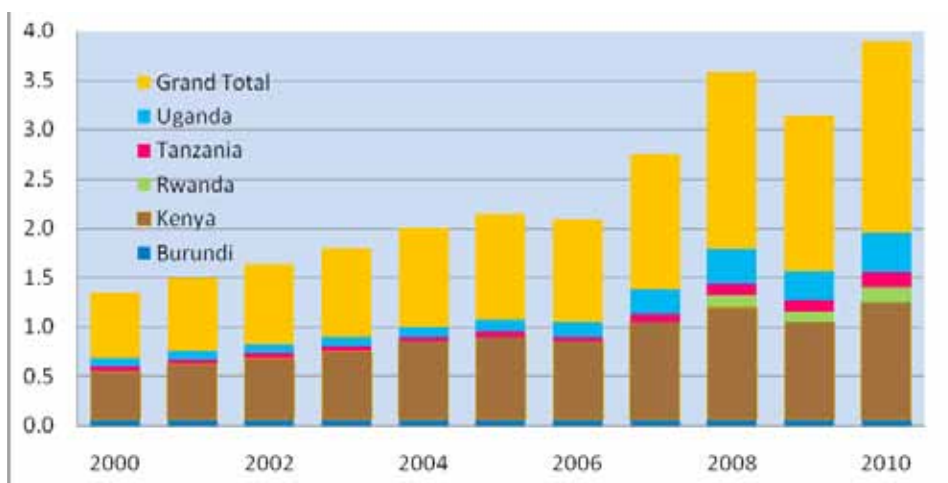
Lastly, the increase in the resources allocated to the agricultural sector in the coming years and the development of the NAIP have led the Government to undertake a reflection to define a new institutional vision of the Ministry of Agriculture and Livestock, which would be consistent with the vision of development of the sector agreed with private stakeholders and shared by technical and financial partners. This new vision will provide guidelines for all the anticipated reforms of the Ministry. While awaiting implementation of the recommendations of the NAIP, the Ministry has already started this restructuring by appointing a Permanent Secretary in place of a Chief of Staff.

3.5 Trade Policies

According to Shelley Winston and Carolina Castellanos of the IMF's Statistics Department, increased intra-regional trade and lower tariffs are paving way for faster growth. They demonstrated that over the past decade, lower tariffs within the EAC have boosted regional trade, offering the five member countries a route to faster growth. According to the IMF's projections, growth in the EAC region was expected to reach 5.9 per cent in 2011 – a noticeably faster growth rate than in the rest of Sub-Saharan Africa.

During 2000-10 periods, intra-regional exports between Burundi, Kenya, Rwanda, Tanzania and Uganda tripled – from nearly US\$ 700 million to nearly US\$ 2 billion. The report revealed that in Burundi (the poorest member state) the overall economic growth has remained constant and imports have declined, mainly because of civil war and inferior infrastructure such as airports, roads and docks, which are needed for trade (Figure 3.2).

At the same time, EAC countries have been exploiting new markets, including those within the region. Exports to other EAC countries are now as high as exports to the Euro area, followed by exports to the rest of Africa and developing Asia.

Figure 3.2: Growth in exports among EAC members (billion dollars)

Source: IMF's Statistics Department (2011)

Tariffs for EAC members in general have fallen substantially. Over the past 15 years, tariffs in the EAC region have been cut from an average of 26.1 per cent in 1994 to an estimated 9.2 per cent in 2011. But some members are reluctant to completely scrap off tariffs because of loss of tax revenue.

Given the substantial reduction in tariffs and sizable increases in exports within EAC, the region is set to achieve sustained higher growth. But to achieve middle-income status over the next 10 to 15 years, the EAC must address a number of issues, such as strengthening of institutional reforms and reduction of non-tariff barriers. In this spirit, since 2011, the Government of Burundi has initiated and implemented reforms to improve the business climate. The new investment code offers attractive opportunities and guarantees the protection of investors' interests, for example, in the following reforms:

- Exemption from tax transfer on the acquisition of land and buildings;
- Imports of raw materials and equipment goods valued at 0 per cent;
- Exemption from advance payment of VAT (18%) on imported investment goods of at least 500 million BIF (about US\$ 350,000);
- A corporate tax credit of 37 per cent of the total value of depreciable property purchased for the implementation of an investment project;
- A tax reduction of 2 per cent and 5 per cent, respectively, for companies employing between 50 and 200 and more than 200 people.

These different reforms have been put in place to make the business climate attractive to foreign investors and for Burundians to invest in many opportunities available in Burundi, such as in agriculture, energy, mining, tourism, transport and infrastructure, hotel facilities, ICT services, agro-processing industry, health, education, etc.

Three main sets of arguments advanced to explain the commonly observed disappointing supply response to agricultural market liberalization in sub-Saharan Africa (Kherallah et al., 2000 cited by Poulton et al. 2006) are:

- i. The state still intervenes too much, or in very arbitrary ways, in markets to give the private sector confidence to make significant investments. Some interventions (for example, local taxes, restrictions on cross-border trade) also directly reduce the profitability of the private sector trading activity and/or lower the prices ultimately received by producers.
- ii. Market liberalization has coincided with a sharp decline in state budgets and hence in public investment in key public goods such as research, extension and infrastructure.
- iii. With high transaction costs and risks in agricultural marketing (for input suppliers, producers, buyers and processors), there is need for specific policy attention to improve coordination of market activities to overcome 'low-level equilibrium traps'.

Regarding goods trade, the key challenges refer to NTBs (Dihel, 2011). NTBs appear in the form of rules, regulations and laws that have a negative impact on trade. The EAC has adopted this broad guideline to define NTBs as “quantitative restrictions and specific limitations that act as obstacles to trade” (EAC Secretariat, 2006). Such restrictions and limitations are embedded in laws, regulations, practices and requirements other than tariffs. They include non-tariff charges, government participation in trade, restrictive trade practices and policies, customs and administrative procedures and practices. In addition are Technical Barriers to Trade (TBT), Sanitary and Phytosanitary Measures (SPS), and un-harmonized working hours. NTBs in Burundi remain a serious concern for intra-regional trade—especially customs and administrative procedures, including the length of clearance formalities and the high number of institutions involved in control operations at the port in Bujumbura. Below is a list of removed and existing Non-Tariff Barriers:

A. Non-Tariff Barriers removed which were affecting Burundi:

1. Varying application of axle load specifications
2. Imposition of Visa on Burundians entering Tanzania

3. Delays at the Ports of Mombasa and Dar es Salaam, which affect imports and exports through the ports
4. Verification and classification of goods (green, yellow, red)
5. EAC Standards Bureau have varying procedures for issuance of certification marks, inspection and testing
6. Release of cargo manifest
7. Reduction of the grace period for transit cargo at Dar es Salaam Port from 30 to 14 days
8. Non-implementation of EAC harmonized documents
9. Lack of harmonized procedures manual
10. Visa charges of US\$ 250 for businessmen
11. Re-introduction by Kenya of a cash bond on vehicles above 2000 cc and sugar transiting from Mombasa to Uganda
12. Requirement for original documentation at the port of Mombasa and Dar es Salaam for clearance of goods
13. Requirement for OTS (Open Tender System) for bulk Fuel Procurement System
14. Kenya had issued new immigration regulations whereby work permits will not be issued to other nationalities below the age of 35 years and earning not less than Ksh 168,000 per month
15. Charges by Container Freight Stations vary from port charges
16. Congestion at the port of Dar es Salaam
17. Payment of double handling charges at the ICDs and at the Dar es Salaam port
18. Inadequate police escort mechanism
19. Controlled movements of cargo trucks between Isaka/Rusumo and Isaka/Kabanga are not allowed to move beyond 6.00 pm within Tanzania
20. Rice, small fish and palm oil from Burundi denied entry to Rwanda
21. United Republic of Tanzania had restricted export of beer from Burundi through the border of Kobero/Kabanga
22. Lack of verification sheds and parking yards at border posts

23. Charge of U\$ 500 for all trucks registered in Burundi when they ship cargo from Tanzania,
24. Several police road blocks along Central Corridor between Dar es Salaam to Rusumo border
25. Lack of harmonized port procedures manual

B. Non-Tariff Barriers removed which Burundi was imposing to other EAC Partner States:

1. Burundi charges entry fees for vehicles from other partner States
2. Requirement of certificates of analysis for goods destined for export to Rwanda and Burundi
3. EAC Standards Bureau have varying procedures for issuance of certification marks, inspection and testing
4. Non-recognition of EAC Rules and Certificates of Origin
5. Non-implementation of EAC harmonized documents
6. Lack of interface within the customs' systems in the Revenue Authorities in partner states
7. Prohibitions of imports of food products from Burundi
8. Metal products from Kenya were charged a CET of 25%

C. Existing Non-Tariff Barriers which still affect Burundi:

1. Existence of several weighbridge stations in the Central Corridor
2. Charges of plant import permit (PIP) at Malaba for tea destined for auction at Mombasa
3. Weighing of empty trucks in Tanzania
4. Uganda Revenue Authority is charging US\$ 200 as transit permit for containers with chemical products
5. Tanzania Revenue Authority is charging US\$ 90 as way leave fees for 20 feet transit container and US\$ 140 for 40 feet container transit trucks

D. Non-Tariff Barriers which concern all EAC partner States:

1. Border management institutions working hours are not harmonized
2. Non-harmonized road user charges and road tolls
3. Lack of coordination among the numerous institutions involved in testing goods

4. Numerous monetary charges required by various agencies in the United Republic of Tanzania on exports of dairy products

Proposed measures to remove Burundi's NTBs within the EAC are:

1. Establishing a mechanism for identifying and monitoring the disposal of NTBs. Preferably, this mechanism would include both public and private sectors representatives concerned with issues of trade facilitation
2. Consolidating institutions in charge of customs clearance and administrative control at the port of Bujumbura in a one-stop window to streamline the transit and customs formalities
3. Improving layout and equipment at border posts
4. Introducing competition in the selection of companies for pre-shipment inspection.
5. Gradually establishing an infrastructure for quality control and certification

3.6 Tax Policy Affecting the Private Sector

The tax burden in Burundi is one of the highest in the world, and consequently is seen as one of the main obstacles for the private sector.

According to the *Doing Business* 2010 report, the total statutory tax rate over profits ratio is 279 per cent, which may lead to tax evasion. The tax regime would need to be simplified and tax exemptions avoided. The value added tax (VAT) of 18 per cent (see box below) needs to be accompanied by information campaigns and taxpayer training.

Box 1: Burundi's Tax Regime

Burundi's current tax regime is riddled with large tax exemptions that make it overly complex and opaque and leads to important distortions that negatively affect producers. Tax exemptions are widely perceived as inefficient, leading to discretionary decisions and delays. The various exemptions (which mainly concern imports) not only reduce revenue collection, but also make tax administration more complex. According to a recent study, 60 per cent of imports entering Burundi in 2006 had partial or total exemptions, costing FBu 103.7 billion (that is, 10.7% of GDP and 65.6% of tax receipts).

The government's decision to introduce a broad VAT, together with membership in the EAC, will lead to broad changes in the tax regime. Under the assumption of a broad-based VAT introduced at 17 per cent and without EAC adhesion, it has been estimated that it will lead to a reduction in tax revenue of FBu 1.6 billion, equivalent to 0.2 per cent of GDP. However, the combined effect of introducing the VAT and joining the EAC is expected to have a large negative effect on overall receipts—estimated at FBu 15 billion (1.5% of GDP). This anticipated negative effect highlights the importance of introducing a broad-based VAT regime, reducing import exemptions and improving tax administration.

Source: World Bank (2011)

Burundi's legal, regulatory, and procedural framework is outdated. Many key laws have been revised recently but are often not accompanied by appropriate regulations, which causes arbitrary or no implementation.

The government of Burundi has already taken important steps in the right direction but a lot remains to be done. In June 2008, the Council of Ministers approved a new investment code that includes some of the best practices in investment legislation—among them, investor protection and freedom to transfer capital and dividends and a streamlined approval process. The investment code was declared law in September 2008 and has been implemented, providing additional incentives to investors. Unfortunately, the revision of the tax code has been significantly delayed. A competition law is being drafted, and two insolvency laws were adopted. The draft versions of the commercial code and the code for public and private companies were revised, and (in line with international standards and the Organization for the Harmonization of Business Law in Africa recommendations) both have been adopted by the Council of Ministers and submitted to Parliament. The mining code is under revision. It should prepare the country for potential large-scale investments and clarify the role of artisanal and small-scale mining.

The economy is characterized by a weak application of the laws for businesses; and by weak capacity to enforce commercial contracts and have commercial disputes resolved fairly, predictably and professionally in the commercial court. Burundi has only one commercial court in Bujumbura, and it lacks adequate facilities, equipment, and skills despite receiving training and equipment through the *Project d'Appui à la Gestion Economique* (PAGE). The high turnover of magistrates also contributes to the court's poor performance in handling its caseload. The government has taken a number of measures to improve the performance of the court and other sector institutions. These measures include salary increases to discourage corruption, increases in the number of magistrates, and a reform of internal rules. The percentage of cases whose duration exceeds 60 days decreased from about 42 per cent in March 2008 to roughly 22 per cent one year later. Moreover, it fell to 14.3 per cent and 10 per cent in May and July 2009, respectively. In an effort to provide quicker delivery of commercial decisions, an arbitration centre was created in 2002 and appropriate legislation was adopted in 2008. Almost 30 arbitrators from various sectors have been trained, and some public education has been initiated. However, although the centre has received some start-up funds from PAGE, it lacks the financial resources to further develop this tool for dispute resolution.

3.7 Diversification of the Economy

Burundi currently has a very narrow export base but has the potential to notably diversify its economy (World Bank, 2011). A successful diversification of its economy is essential over the long run to be able to better withstand external shocks, generate income and create employment (especially off-farm employment). Research has shown that there is a link between increased diversification and higher GDP per capita, where diversification usually leads to higher income levels.

To realize this transformation, a number of steps must be taken by the government and the private sector. Here are some general suggestions:

Burundi should focus on existing products and those well within reach to start the diversification process. The selection of products and sectors needs to be based on detailed information and thorough analysis. Possible products are those that have been identified as emerging champions, as classics with a currently low export share and as marginal, which have the potential to develop a revealed comparative advantage. Existing strategies such as the National Agricultural Strategy should be used to guide the diversification process.

Diversifying should be a gradual, sequenced process that starts with the expansion of the current market share. There should be a diversification of unsophisticated primary products and a subsequent move to more sophisticated and eventually manufactured products. Sectors that have the greatest potential are mining, agro-processing and fishing.

The ongoing regional integration process should be used to maximize Burundi's benefits from its accession to the EAC. Reduced tariffs and NTBs will enable Burundi to have easier access to a larger market, facilitating an increase in exports to the regional market. This market can also be used to introduce new products, and build expertise and skills before attempting to access international markets. To a large extent, Burundi can also benefit from regional infrastructure projects that could improve transport and logistics significantly.

The large infrastructure gap needs to be closed. This applies to a range of areas, including roads, air transport and electricity. Regarding transport infrastructure, the insufficient availability of cold storage and a cold chain, in general, needs to be addressed.

The business environment must be improved to attract foreign investors as well as to provide incentives for domestic investors and enterprises. The business environment in Burundi is one of the most unfavourable in the world. Reforms need to be implemented without delay.

Burundi needs to develop an action plan and establish the necessary facilities/laboratories to comply with international sanitary and phytosanitary standards. Without compliance with these standards, it will be extremely difficult to export outside the region. Burundi could benefit from the experience of other EAC members in this area.

4 Climate Change, Trade and Food Security

4.1 Climate Change and its Implications on Agricultural Food Production

Unprecedented increase in human population, environmental degradation and climate change in many developing parts of the world are a major problem in providing adequate food security. Recent studies show that 20 per cent of the people in the developing world are chronically undernourished and more than half of child deaths each year are related to malnutrition (IFAD, 2001; IFPRI, 2002). While the rest of the world has made significant progress towards poverty alleviation, Africa in particular Sub-Saharan Africa continues to lag behind. The proportion of the malnourished population has remained within the 33-35 per cent range in Sub-Saharan region, with 70 per cent of the food insecure population living in rural areas (Rosegrant et al., 2005). The food situation in Sub-Saharan Africa is aggravated by lack of innovative ideas and policies for developing traditionally consumed natural resources.

In order to better understand the effects of climate change, a study on climate change projections for Burundi was conducted within the framework of the GIZ project - ACCES) (Stefan et al., 2014).

The climate change projections conducted for this study showed that the dry season in Burundi will likely become hotter and longer in future. This trend will be most severe in the last third of the 21st century.

These climatic changes will have significant implications in the agricultural sector and people's livelihoods in Burundi:

1. Future climate conditions may no longer be optimal for growing the crops currently cultivated in the different regions of Burundi. Agricultural practices and crop types would therefore need to be adapted to rising temperatures and changing rainfall patterns and amounts.
2. Higher temperatures and a prolonged dry season may reduce available water resources in regions already prone to seasonal water scarcity. This particularly applies to the northern part of Burundi as well as the area around Bujumbura.
3. The rainfall water surplus may not help matters as it is easily lost through runoff. This could further increase soil erosion in Burundi and decrease the already scarce arable land resources.
4. This study did not address the risk of extreme rainfalls due to climate change. However, increased precipitation could take the form of extreme rainfalls, which may increase soil erosion risk and frequency of land and mudslides.

Thus, in order to cope with these adverse effects of climate change, such trends in precipitation and temperature should be considered in adaptation strategies and development plans of relevant vulnerable sectors, as well as in land use planning.

Box 2.: Climate-smart Agriculture: A case study of Karera river basin

The goal of the trans-boundary agro-ecosystem Management Project for the Karera River Basin (Karera Temp) which is funded by the Global Environment Facility (GEF) and implemented by FAO is to adopt an integrated ecosystem approach for the management of land resources in the Karera River Basin. The Basin is shared by Burundi, Rwanda, Uganda and the United Republic of Tanzania. Interventions are being monitored in terms of the local, national and global benefits that are generated. These benefits include: restoration of degraded lands, carbon sequestration, climate change adaptation, sustainable use of agricultural biodiversity, and improved agricultural production and rural livelihoods. Indirect benefits that are being monitored are the project's contribution to the protection of international waters and enhanced food security. In the project's monitoring framework, a participatory multi-sector process for assessing and mapping of the land degradation and sustainable land management was undertaken for the entire basin.

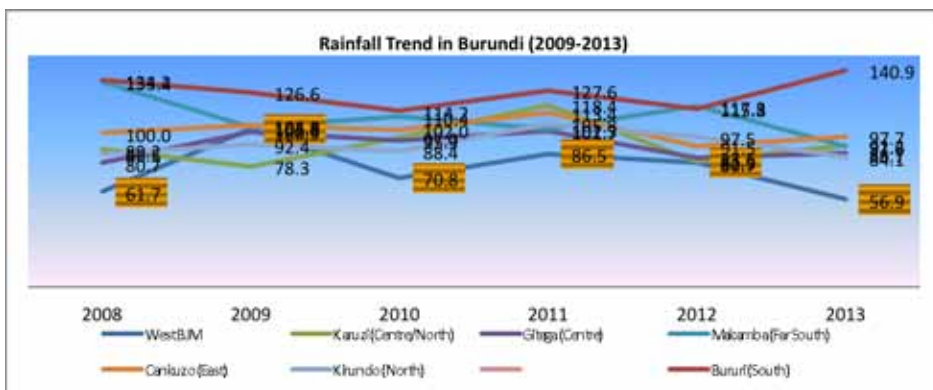
Source: FAO (2013)

4.2 Linking Climate Change, Trade and Food Security

In Burundi, challenges and threats on agriculture broadly reflect agro-ecology with high population density in the higher potential areas becoming a threat to food security. This is because land holdings are sub-divided during each successive generation, resulting in ever decreasing plot sizes. In some districts, plots are now so small that they cannot sustain household food security needs. Again, as these holdings are intensively farmed, some holdings in particular those on slopes are being degraded because of uncontrolled runoff. This is a particular issue of concern in areas where the highland forests have been felled or degraded as rainfall infiltration rates have been compromised. Chronic food insecurity is an increasing problem in some high potential areas, in particular those starved of rural development funds which would have promoted livelihood diversification.

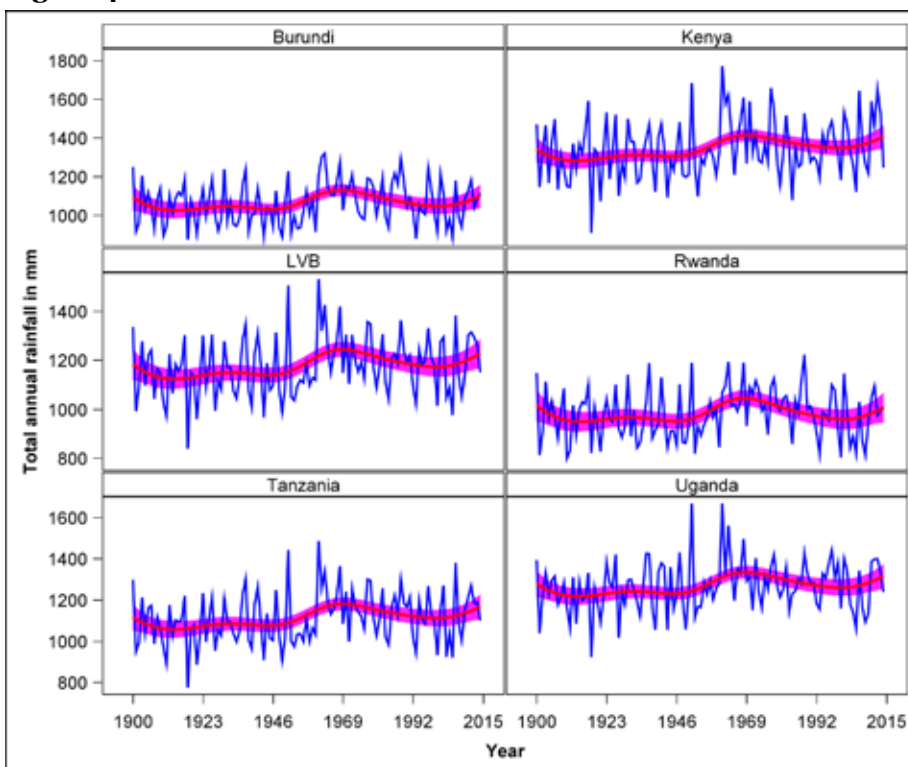
Whilst there is much talk of climate change and its impact in the region, there is little evidence to suggest that drought is more common than it was in the 20th century.

Figure 4.1: Rainfall trends in Burundi (2009-2013)



Source: IGEBU (2014), Statistics of Weather

Figure 4.2: Total annual rainfall in mm in East and southern Africa



Source: GIZ/ACCES, Economic impact of climate change in the EAC

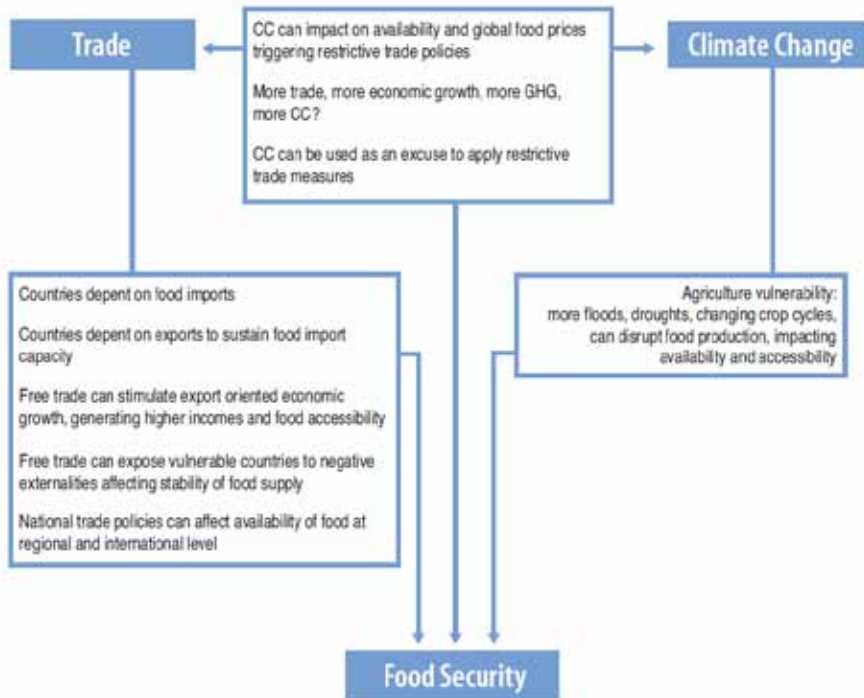
What does appear to have happened is that rainfall is more intense and erratic and that coupled with higher levels of vulnerabilities in the region's dry lands, drought-like conditions are manifested more quickly.

Populations are also on the increase in dry land contexts and therefore natural resources (pasture, water, trees etc) are all under increasing pressure.

Other challenges include low levels of smallholder farmer productivity and the relatively high degree of dependence on external food aid. The food availability and economic conditions of most (if not all) of the countries in the eastern Africa region are highly dependent on rainfall. The extent is that the occurrence of a single climatic disaster such as drought or floods is capable of halting or even reversing the economic growth achieved over the previous decade or so. This is especially so since the main source of economic growth (rain-fed agriculture) is climate dependent (Meshach, in FAO 2008). Moreover, historically low levels of investment in agro-ecologically linked farming and livestock systems including both research and extension services – often the services that do exist adopt a ‘top-down approach’ where development professionals fail to recognize indigenous knowledge and skills. They also overlook the total farm production as they concentrate their efforts on yields of specific crops. As a result, the production in kitchen gardens and on the plot margins of vegetables, fruit trees, timber trees, bees, other livestock and wild plants are commonly overlooked.

Farmers make up 49 per cent of the country's poor. Most of them live in remote areas isolated from agricultural tools and markets. As a result, they struggle to grow enough food to feed their families and face an annual “hunger season”. Year after year, they find themselves trapped in a cycle of low yields and continued poverty.

Figure 4.3 presents a schematic view that summarizes the three dimensions of climate change and trade interactions affecting food security.

Figure 4.3: Climate change and trade interactions affecting food security

Source: Antonio Schiavone (2010)

According to Waithaka et al. (2013), a government initiative on universal primary education gives most children in Burundi the opportunity to go to primary school. However, enrolment in secondary schools dropped significantly to only 15.2 per cent as a consequence of widespread poverty (Table 4.1). The literacy index (59.3%) is lower than the regional average. Education increases an individual's resilience to stress by enhancing the range of opportunities for income generation within and outside agriculture.

Following the Millennium Development Goals National Report (UNDP, MDG, 2015), Burundi has merely reached the universal primary school goal as the proportion was of 95.4 per cent in 2014. However, as the share of pupils achieving the 5th class was of 76 per cent at the same period and the alphabetization rate for the 15-24 years category was 77 per cent in 2012, it is assumed that the MDG No.2 has a big progress but not fully achieved. Moreover, the MDGs have been renamed Sustainable Development Goals by the UN Summit and all targets rescheduled to 2030. Education is still on the brink. Theoretical approach following Benhabib and Spiegel (1994) state that more education causes fast innovation. Lucas (1988), Mankiw, Romer, Weil (1992) concluded from their studies that accumulation of

human capital increase productivity of other factors and causes economic growth. Education will therefore play a key role in reducing poverty and inequity.

For instance, it is important to emphasize that it is impossible to reduce poverty and sustain food security without promoting gender equality and empowering women. Following recent progress quoted in the MDG Report (2015), Burundi has made major progress in education. However, gender equality is still behind the overall education level. Secondary schools and higher education institutions got low gender schooling rates. In 2014, while the proportion of females/males was high with a proportion of 91 per cent at the starting of the first cycle secondary school, the rate at the end only reached 76 per cent. Moreover, at higher education level, the share of females to males was 37 per cent in public institutions and 80 per cent in private ones. In fact, higher education institutions have a lot to do to promote gender equality, allow poverty reduction and combat job discrimination of any kind.

Food Security and Malnutrition in Burundi

In general, the problems of malnutrition are categorized into three types: chronic malnutrition, severe malnutrition and insufficient weight. The table below presents the recent trend from two surveys (EDS 2010 and PMS 2012) published by the Burundi Ministry of Health and HIV.

Table 4.1: Trend of indicators on malnutrition in Burundi (EDS 2010 and PMS 2012)

Distribution by Quintiles	Chronic Malnutrition		Severe Malnutrition		Insufficient Weight	
	EDS 2010	PMS 2012	EDS 2010	PMS 2012	EDS 2010	PMS 2012
Scores for wealth in scores percentage						
Lowest Quintile	70%	64%	8%	9%	40%	36%
2	59%	64%	6%	8%	30%	32%
3	62%	60%	5%	7%	29%	30%
4	57%	56%	6%	6%	27%	27%
Highest Quintile	44%	46%	5%	5%	18%	22%
Total	58%	58%	6%	7%	29%	30%
Concentration Index	-0,0795	-0,0617	-0,0896	-0,1196	-0,1373	-0,0952

Source: World Bank (2014); Ministry of Health and HIV, EDS Report (2010) and PMS Report (2012)

From this table, it is very clear that malnutrition constitutes a huge health issue in Burundi. In most wealth categories of the population, more than 60 per cent of the children are affected by chronic malnutrition which influences their growth. In addition, for the children who caught severe malnutrition (6-7%), the consequences are inadequacy between weight and size. Insufficient weight was seen in 30 per cent of the children in 2012.

However, it appears that malnutrition is a big issue for poor people (the two first quintiles) even though the rate is still high for the richest category (46%). The negative concentration index shows that malnutrition is more concentrated in the poor categories. In fact, there is a negative correlation between income and malnutrition.

Education, malnutrition and health

Previous studies have also shown a high positive correlation between education and income levels, asset ownership, use of agricultural inputs, and credit access, all important factors enabling households to stem the effects of climate-related stress. Burundi's resilience to climate shocks as measured by the education level of its citizens is therefore considerably low.

In Burundi, 39 out of every 100 children under the age of five are malnourished in terms of weight. Malnutrition is especially prevalent in the drought-prone areas of the northern and eastern provinces and in camps of Internally Displaced Persons (IDPs), and would be aggravated by further climate stress. Burundi has grappled with issues of internal displacement of its people since the 1993 coup, and the ensuing civil strife. By 2010, Burundi still had more than 100,000 IDPs down from the peak number of 800,000 recorded in 1999. IDPs lack security of tenure in the settlements and many are far removed from the land on which they depend for survival, leading to rapid degradation of the available soil, water, and forest resources as they attempt to meet basic needs such as food, fuel and shelter.

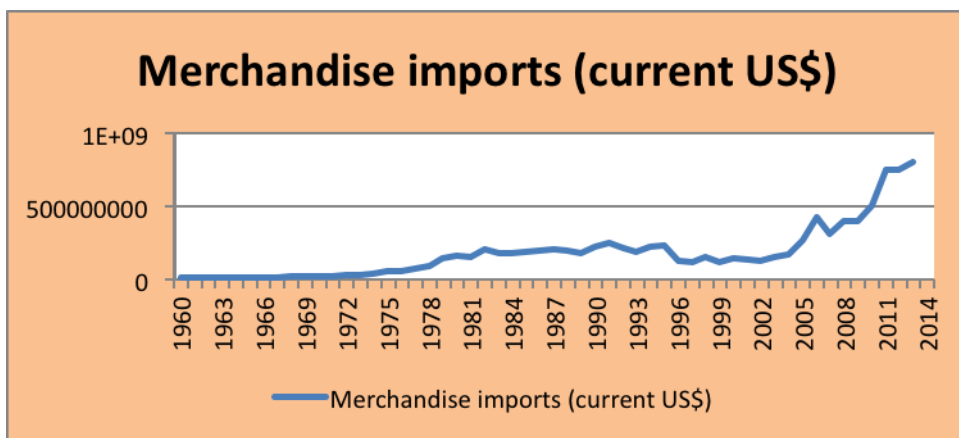
Lack of access to land means that many IDPs are unable to produce their own food and are dependent on humanitarian assistance. Burundi was traditionally self-sufficient in food production, but since the latest conflict and recurrent droughts the country has had to rely on food imports and international food aid in some regions, with the food import bill amounting to 12.5 per cent of total imports in 2009. According to a study conducted by the World Food Programme in 2004 (Burundi, Ministry of Finance, 2007 Report) the level of food vulnerability is extremely high; 61 per cent of Burundi's households risk food insecurity at some point during the year as a result of weather related events, declining soil fertility and rising food prices.

Generally, life expectancy at birth has improved, rising from 40 years in the 1980s to 50–52 years in the 2000s. The infant mortality rate has declined from more than 250 cases per 1,000 births in the 1960s to fewer than 200 cases per 1,000 in the 2000s; nevertheless it remains very high. The main cause of death is malaria (40%) (Burundi, Ministry of Water, Environment, Land Management and Urban Planning 2009) which mainly affects pregnant women and children under five years of age; diarrhoea (3%); acute respiratory infections (19%); malnutrition, HIV and AIDS. A healthy labour force is critical to sustaining income from agriculture and hence resilience to climate shocks. Wood et al. (2010) revealed that the proportion of the population living on less than US\$ 2 per day is 93 per cent. The “Poverty Reduction Strategy Paper” (Burundi, Ministry of Finance 2007 Report) shows a rural–urban divide in the incidence of poverty: the rural poor are about 49 per cent below the poverty line, while the number is only 17.9 per cent on average for the urban poor. The poverty level is also higher in provinces most affected by the past conflict, such as rural Bujumbura, Bubanza, Cibitoke, and Karusi as well as the northern and eastern provinces that were hit by three years of drought. Poverty in rural areas is due to several general factors: high population pressures on over-cultivated eroded land, supporting farms of an average size of 0.5 hectares, insecurity, displacement, persistent drought, scarcity or poor quality of agricultural technologies and limited market incentives (IFAD 2011 cited by Waithaka et al., 2013).

The World Bank through its study in 2008 says that access to financial services, including agricultural insurance and other risk financing instruments such as saving or credit can help farmers and herders engage in more capital intensive farming practices and ensure that they can start a new production cycle after a natural disaster (Mahul and Stutley, 2010).

Agriculture vulnerability and trade

Burundi is considered a fragile State and is getting in general more than 50 per cent of the public budget from international donors. This allows the country to import and compensate for the insufficient national production. Since 2000s, Burundi has doubled the imports and the next figure describes how the imports trend will go farther than expectations.

Figure 4.4: Merchandise imports (current US\$)

Source: World Bank (2014), *The WDI databank*

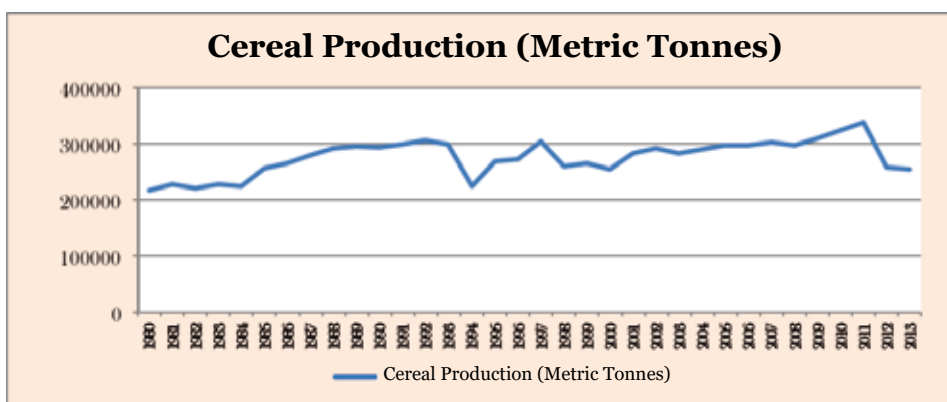
As shown in Figure 4.4, the position of Burundi as a net importer is due to the incapacity of the production system (and factors especially agriculture) to respond to the increasing demand. Vulnerability due to climate change and weak productivity has placed Burundi in the position of net importer and aid dependent.

Consequently, exports estimated at 35% of imports and grants from various partners are sustaining and financing imports especially for food importation and other priority goods.

The position of Burundi as a free trader increases exposure to international external shocks from capital volatility and conditioned grants. In fact, national socio-economic policies and internal stability such as inflation rate and interest rate have affected the position of the country as a net importer and aid dependent.

Comparing food imports to the total imported leads to the same conclusion; the proportion of food imported is progressively increasing. In the early 1990s, the share of food in the total imports consisted of 15 per cent or 20 per cent. However, since 2000s and with the support of donors, the proportion of food imports has reached 30 per cent and the volume seems to be increasing. This is due to multiple reasons, among them the increasing population and their purchasing power. But essentially, this is due to the weak capacity of production especially in the agriculture sector.

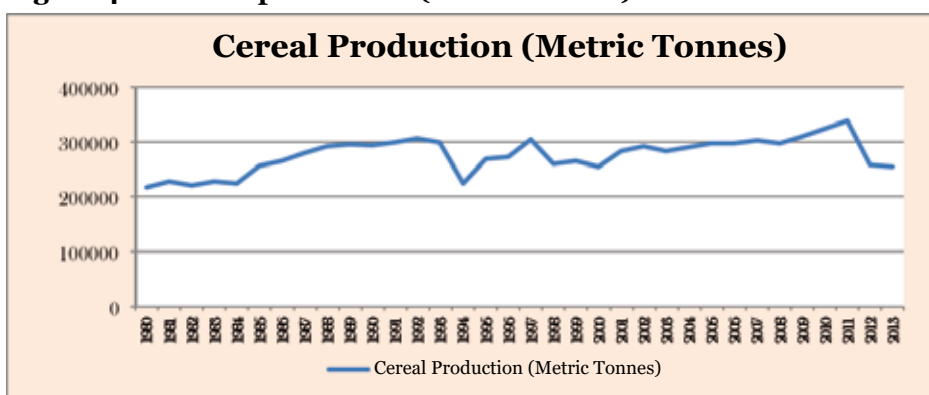
Figure 4.5: Food imports (% of merchandise imports)



Source: World Bank (2014), World Development Indicators

From diverse investment programmes and priorities, the agricultural sector continues to benefit from public supports and inputs especially for fertilizers and livestock. However, production does not seem to make huge progress particularly for some crops that are still decreasing. The next figure presents the latest trend for cereal production in quantity, and confirms that production is merely constant for three decades.

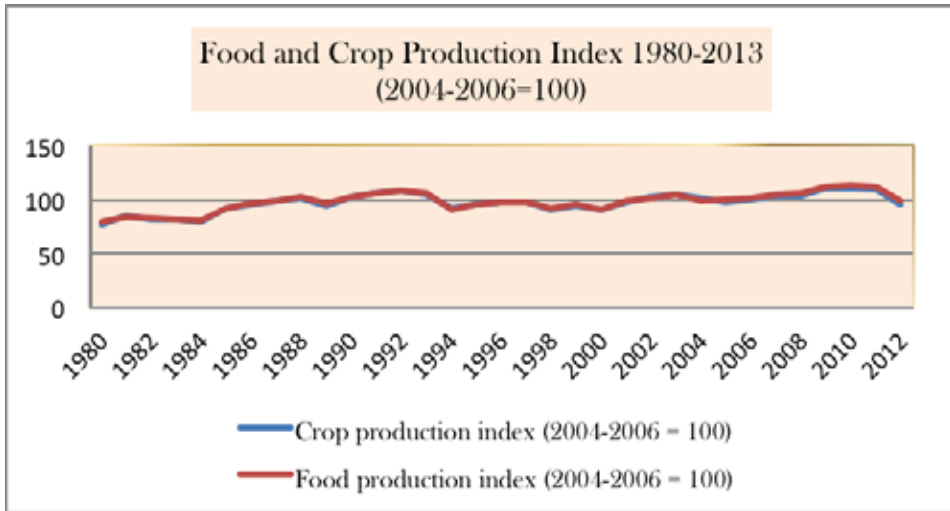
Figure 4.6: Cereal production (metric tonnes)



Source: World Bank (2014), World Development Indicators

In fact, due to climate change and without significant investment and technical intervention in agriculture, food and crop production is constant. It is even decreasing compared to other sectors such as industries or services. Consequently, Burundi continues to import food in order to deal with the increasing population and will face long term external deficit if the government does not take this opportunity to invest more to boost the decreasing returns in agriculture and to combat food insecurity.

Figure 4.7: Food and crop production Index, 1980-2013



Source: World Bank (2014), World Development Indicators

5 Conclusion and Policy Recommendations

5.1 Conclusion

Climate change will impact on agricultural production and productivity around the world and the agricultural sector will have to adapt to climate change if we are to achieve global food security (Charlotte, H., 2009). The general consensus among experts is that agriculture is highly vulnerable to the increased frequency of severity and unpredictability of extreme weather-related events caused by climate change, such as hurricanes, droughts, floods, and rising sea levels. From the East Africa Climate Change Projections published by the International Panel on Climate Change (2007), Africa will warm up during this century and in all seasons. For East Africa, it is expected that temperature projections will increase by 3°C to 4°C from 2080 to 2099 period compared to the 1980 to 1999 period. Moreover, this will be followed by dryness across most of eastern Africa, even though projections for East Africa point out to an increase in rainfall during the same period.

Burundi's agricultural sector is the main contributor to food security and contributes approximately 46% of GDP. However, the sector is characterized by high production risks due to its over-dependence on rain-fed agricultural system. This makes climate change a threat to Burundi's food security.

There are several constraints in achieving food security in Burundi. The most challenging are the progressive atomization of farms due to rising population. In addition, agricultural trade and prices are highly influenced by climatic patterns which negatively impact on food security and trade, market accessibility and affordability.

There are a number of policies governing agricultural production and food security in Burundi, but a lot more needs to be done to implement or improve those policies. The inter-linkages between climate change, trade and food security need to be addressed to help improve a favourable environment for business, and for the private sector to prosper. Also, there is need to address the issue of high fragmentation of land due to population increase, which negatively affects food security. In Burundi 2025 Vision, the government commits to set up a voluntarism politics (policy) of control of demography through an aggressive strategy in partnership with socio-economic development actors, and with support of religious organizations, the civil society and NGOs. The information and education about family planning and reproductive health are the key points to be emphasized.

Agriculture in Burundi and in many countries in SSA depends on rains and any change in weather affects agricultural production. Burundi has enormous potential for irrigation, but the government does not have the means to provide the investment necessary to implement such initiatives. There is need for investment as agriculture relies on rains. It is therefore imperative to mobilize substantial investments that can yield substantial and rapid results. Several adaptation strategies should be adopted by the government to ensure food security by, for example, supporting climate change adaptation initiatives and using effective weather forecasting technology. In the use of weather forecasting technology, the government should rethink and restructure the Burundian cropping system taking into account climate change. Clearly, more data and projections at more sites across the country with such variations in climate and altitude are required to give a clearer picture of possible future conditions.

From the study analysis, water and soil resources are also essential for Burundi's economic and social development. Currently, these resources are under high stress from population growth, land use pressure and rising natural resource demand. Climate change and increasing climate variability may make the situation worse and further degrade the availability and quality of water and arable land.

Another important insight from the assessment is that Burundi has one of the most unfavourable business environments worldwide (World Bank, 2013). Thus, the government of Burundi has initiated and implemented reforms to improve the business climate. The new investment code offers attractive opportunities and guarantees the protection of investor's interests. However, a well-articulated trade policy is needed to promote sustainable economic growth leading to poverty alleviation. Policy makers should enhance trade liberalization initiatives to stimulate exports and therefore generate economic growth, increase incomes and greater capacity to access food by households.

The physical and economic access to the market is one of the limiting factors for food security in the family and at country level. The number of markets and infrastructure development as mentioned above also affect food security. The farther the market is, the more the food prices rise and the more the food security is negatively affected. Most households are often forced not only to sell their crops immediately and at cheaper prices due to lack of storage and processing facilities, but also due to non-access to major markets. They then buy the same products after some time at much higher prices.

The non-tariff barriers in Burundi are a serious concern for intraregional trade, especially customs and administrative procedures, including the length of clearance formalities and the high number of institutions involved in control operations at the port in Bujumbura.

5.2 Policy Recommendations

Burundi has several policies and strategies governing agricultural production, trade and food security. There is need to build on those policies for further improvements and implementation.

To date, some agricultural policies have been developed to boost the national economy. The approach in the formulation of agricultural production is based on a long term Burundi Vision 2025, a national Poverty Reduction Strategy Plan (CSLP), a National Agriculture Strategy (2008), the National Agricultural Investment Plan 2012–2017, and a Comprehensive Africa Agriculture Development Programme (PDDAA, 2009). The Burundi 2025 Vision describes the basic development objectives of the country over a long term. The PRSP provides a vital role in the development of agriculture. An integration of those thematic needs to be addressed with a multi-sector approach includes the following:

1. Because of the small average farm size, it is absolutely essential to raise the productivity of the existing farmland. That means increasing physical productivity through better technologies that generate higher yields. It is also crucial for Burundi to deal with rapid population growth of 3% per year and ensure adoption of climate change smart adaptation to avoid damaging and degrading the environment.
2. To facilitate adaptation of agriculture to climate change, Burundi policy makers should also invest in infrastructure, agricultural productivity, education and health, and promote income-earning options outside agriculture, promote sustainable land management, and implement sensitization and awareness campaigns on the potential impact of climate change on agriculture.
3. Collaboration with local farmers, input suppliers, traders, and consumer groups is also essential and should be addressed by policy makers for effective development and dissemination of locally appropriate, cost-effective techniques and cultivars to help revitalize communications among farmers, scientists and other stakeholders to meet the challenges of climate change.
4. Funding for national statistical programmes should be increased so that they can fulfill the task of monitoring global change.
5. Develop farmers' skills and capacities and promote rural financial institutions to facilitate farmers to get loans for inputs such as fertilizer.
6. Integrate climate change, food security and trade linkages among stakeholders in an inclusive manner.

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Appendix

Appendix 1: Evidence of agricultural performance in Burundi (1961 to present)

- 1960–1972 period was characterized by policy instability, resulting in economic decline.
- 1972-1988: expansion of the basis for economic rents.
- Burundi's very narrow export base (averaging only about 10 per cent of GDP) has not changed notably in the last 20 years. Compared with most of the other EAC members, Burundi has a relatively high level of export concentration.
- Burundi's economy is highly dependent on primary products; predominantly coffee followed by tea.
- Burundi's export structure is characterized by very low use of technology.
- Burundi has been only partially successful in introducing high-value primary products, such as cut flowers and the income potential of Burundi's export basket remains low.
- The expansion of coffee faces severe challenges. Some 600,000– 800,000 households (perhaps one-third of the population) grow coffee. Though Burundi has the agricultural conditions to produce high-quality, high-value coffee, the sector underperforms. This is because inadequate official measures do not stimulate production thus a decline also in quality.
- Unlike Rwanda, Burundi has been slow to match the latest developments, such as the increased importance of specialty coffees or the marketing of high-quality coffee.

Source: Compiled from Africa Growth Initiative (2012); Dihel (2011); Otieno-Odek (2003); Mwase et al. (2007); Kasekende et al. (2007); Malunda (2012)

Appendix 2: Attractiveness of the agro-industrial Sectors in Burundi.

The principal traditional agro-industrial crops are coffee, tea and cotton.

Coffee

Coffee accounts for more than 80% of export revenues and provides employment for 800,000 rural households. Its production grew significantly in 2008 with an increase of more than 200% compared to the volume produced in 2007, estimated at about 8,000 tonnes.

The process of liberalizing the coffee industry has been embarked upon, in order to increase productivity, competitiveness, and the incomes of coffee growers. This is also to facilitate the privatization of coffee washing station and hulling plants. Further, the establishment of a regulatory authority for coffee activities and joint-trade organization including coffee growers represents an important link in the government's strategy of disengagement from direct participation in the industry. It is anticipated that these reforms will allow Burundi to regain the ability to grow enough coffee. It will also help to develop greater control over the cyclical nature of the industry and gain access to international markets, particularly in terms of specialty coffee, the competitiveness of which has already been demonstrated.

Tea

Tea production has performed poorly over the last few years primarily due to dry climatic conditions. A liberalization program is being carried out to improve production yields from the various tea growing entities.

Cotton

Despite a slight increase starting in 2006, cotton production shrank considerably in 2008 primarily due to an early season. To address these problems, the national cotton company has taken steps to promote renewed production. This involves increasing the producer price, granting bonuses to the best producers, and introducing credits for fertilizers and plates.

Palm Oil

Palm oil has high growth potential that should be given specific attention in the context of developing regional trade. In 2009, palm oil production increased by 16.2% compared to 2007. Efforts that have been undertaken to promote palm oil production have involved restoring more than 2,300 plantation hectares to improve quality and increase production of this crop.

The amount of oil sold represents 85% of the oil produced and much of it is disposed of on the local market. There is strong sales potential in the neighbouring countries and these possibilities should be developed by significantly improving the quality of the oil.

Sugar

The Moso area, in which the Sugar Company of Moso (SOSUMO) is located, has favourable conditions for sugar production. These conditions include: good soil that is sandy, clay, light and permeable alluvial and suitable for sugarcane cultivation. A fine sunny climate that is favourable for the growth and smooth maturing of the cane (20 degrees centigrade to 32 degrees centigrade), very good thermal amplitude facilitating the deposit of saccharin and harvesting in time are also necessary. The varieties of canes cultivated at Moso are very rich and pure; and have no threat of diseases especially viral and fungal ones which affect the juice. A new sugar factory is to be set up in the near future near the capital; Bujumbura.

Source: Adapted from EAC, 2012b.

Appendix 3: Burundian total trade with the rest of the world, 2004-2008 (USD million)

Country/ Region	2004	2005	2006	2007	2008	% Change		2007	2008
						2005	2006	2007	2008
Kenya	27.87	34.42	36.74	31.73	31.89	23.50	6.74	-13.63	0.49
Uganda	11.75	12.29	18.59	40.62	37.07	4.58	51.23	118.57	-8.75
Tanzania	15.06	13.08	7.65	9.95	16.91	-13.14	-41.52	30.11	69.92
Rwanda	5.01	3.66	4.17	4.27	8.13	-26.98	13.93	2.46	90.21
Rest of Africa	20.78	32.28	36.02	29.36	34.39	55.35	11.58	-18.49	17.16
EU	77.5	11.80	155.9	103.2	140.8	52.38	32.11	-33.80	36.34
UAE	0.46	9.82	17.47	11.99	14.98	2019.62	77.90	-31.37	24.94
China	6.33	11.83	18.77	13.91	26.34	86.86	58.66	-25.88	88.60
USA	1.09	3.09	10.23	4.75	3.16	183.67	231.07	-53.57	-33.47
Japan	10.78	18.63	33.66	17.00	16.85	-	80.68	-49.49	-0.88
India	9.14	10.46	14.81	13.22	16.94	14.38	41.59	-10.74	28.14
Rest of the World	39.47	61.22	135.50	103.18	129.93	55.12	121.33	-23.85	25.93
Total Trade	225.21	328.82	489.54	383.23	477.25	46.01	48.88	-21.72	24.53

Source: EAC (2010): Trade report 2008.

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