Analysis of national and regional agricultural trade in maize, soybeans and wheat:

A focus on Rwanda

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# TABLE OF CONTENTS

**EXECUTIVE SUMMARY**

**LIST OF ACRONYMS**

**LIST OF FIGURES**

**LIST OF TABLES**

## 1. INTRODUCTION

1.1. Introduction

1.2. Objectives

1.3. Methodology

1.4. Study limitations

1.5. Structure of the report

## 2. SITUATION OF PRODUCTION AND PROCESSING OF MAIZE, SOYBEANS AND WHEAT

2.1. Production of maize, wheat and soybean

2.1.1. Production of maize

2.1.2. Production of wheat

2.1.3. Production of soybean

2.2. Processing of maize, wheat and soybean

2.2.1. Maize processing

2.2.2. Wheat processing

2.2.3. Soybean processing

2.3. Contribution of maize, soybean and wheat to food security and household’s income

2.4. Main challenges and constraints in producing and processing of maize, wheat and soybean
# Table of Contents

3. MARKET ANALYSIS FOR MAIZE, WHEAT AND SOYBEAN PRODUCTS  
3.1. Introduction  
3.2. National marketing of soybean, maize and wheat products  
3.2.1. Marketing of maize  
3.2.2. Marketing of wheat  
3.2.3. Marketing of soybean  
3.3. Regional agricultural trade flows for soybean, maize and wheat products  
3.3.1. Intra EAC flows for soybean, maize and wheat products  
3.3.2. Rwanda in the context of EAC regional flows  
3.4. Marketing and trade barriers for soybeans, maize and wheat processed products  
3.5. Marketing opportunities and possible solutions to overcoming trade barriers  

4. AGRICULTURE TRADE ENABLING ENVIRONMENT  
4.1. Relevant national policies, institutions and strategies for soybeans, maize and wheat processed produce trade  
4.2. Relevant EAC policies, institutions and strategies for soybeans, maize and wheat processed products trade  
4.3. Recommendation on policies, institutions and strategies  

5. CONCLUSIONS AND RECOMMENDATIONS  

REFERENCES
Speciose Mukagisigwa from Nyarubaka with her son, David, and daughter, Sophir. Speciose is a member of a local cooperative supported by Trócaire.
EXECUTIVE SUMMARY

The focus of this study is the trade in maize, soybeans and wheat and their derived products within Rwanda and between Rwanda and the East African Community (EAC). In particular, the study analyses the agricultural trade flows for maize, soybeans and wheat at national and regional levels, paying attention to opportunities and threats for a competitive market for raw and processed products originating from Rwanda. It also describes and analyses the enabling environment including regulations, policies, strategies and institutions that govern production, processing and trade flows of maize, soybean and wheat grains and processed products. Finally, it identifies opportunities for policy and strategic reforms as well as the necessary measures to facilitate those reforms.

The findings of the study provide Trócaire, her partners and other development stakeholders with important information which can be used to support the development of maize, wheat and soybean markets in Rwanda and the East Africa region. The findings will assist small scale farmers to improve the competitiveness of their maize, wheat and soybean products and hence increase their access to domestic and regional markets. The information included in this report comes from an extensive review of current information available on maize, soybean and wheat market chains in Rwanda. In addition, interviews were also held with maize, soybean and wheat producers and processors and other key informants. The recommendations made are based on analysis of all the data gathered.

Key Findings

- **Most small scale farmers do not sell their produce in national or regional grain markets.** Instead, they sell the majority of their grains to rural traders who usually offer prices well below the prevailing market rate;
- **At a farmer level, the market is working against individual farmers who are vulnerable to price fluctuations and usually sell their grains at low prices.** As they have a stronger negotiation position with buyers, farmers who are members of cooperatives benefit from relatively better prices than individual farmers;
- **Domestic production of grains is low and not sufficient to meet market demand within Rwanda.** Grain produced often fails to meet quality requirements. As a result, processors are required to import grains in a raw form from inside and outside the EAC. Imports of maize and wheat grain are estimated to be roughly 20% of domestic consumption, with maize and soybean grains coming mainly from Kenya, Tanzania and Uganda and wheat from non-EAC countries. Grain-based processed products (maize flour, wheat flour and soybean oil) are also imported from inside and outside the EAC.
- **Grain processors in Rwanda are working well below their capacity.** Only 30% of grain processed in Rwanda is of domestic origin. Overall, there is a negative trade balance for maize, soybean and wheat grains within the EAC, as well as for derived products such as maize and wheat flour and soybean oil. Therefore, there is an opportunity for Rwandan producers and processors to increase their share of the local market and to export to EAC markets;
- **There is a favourable environment for the trade of maize, wheat and soybean products at a national and EAC level.** The Government of Rwanda has taken a number of measures which promote the production, processing and trade of maize, soybean and wheat products. At the EAC level, since 2010, all internal tariffs have been removed and the remaining non-tariff barriers are currently being reviewed.
Recommendations

For Trócaire and other stakeholders (private and public institutions)

Based on the findings of the study, Trócaire and stakeholders within the maize, soybean and wheat markets, such as small farmers, local and international NGOs, commercial organisations, donors, local and national government organisations and other development partners, are urged to work together to ensure the following measures are undertaken to improve the functioning of primary markets:

1. Establish a market information system, which grain producers can access easily to obtain timely information from major markets within the country;
2. Increase producers’ awareness of the benefits of formal agricultural marketing systems to ensure the sustainability of the market, for example, through introducing price guarantees and purchase agreement contracts;
3. Establish an insurance system, which provides farmers with compensation for any losses incurred in case of natural disasters affecting crop production;
4. Ensure the provision of increased funding for the construction and improvement of rural roads and markets;
5. Provide support to enable farmers and cooperatives to improve the processing and post-harvest facilities, for wheat and soybean in particular;
6. Provide training for cooperatives in management and price negotiation, particularly for those involved in wheat.

More broadly, in order to contribute to the development of maize, soybean and wheat markets, Trócaire and stakeholders should put an emphasis on activities aimed at improving the production and processing of grains. Such activities include:

- Promoting the use of improved good quality inputs;
- Conducting research on seeds in order to find varieties that are high yielding and suitable for local soils;
- Promoting production processes that increase the nutritional value of processed products; and
- Developing models for the integration of small-scale production and processing stages which include options for farmers’ cooperatives to buy shares in industrial processing.

The survey has found that the EAC trade environment is conducive to the expansion of maize, soybean and wheat products. This is due to the removal of tariffs within the EAC area and the establishment of institutions such as the Eastern Africa Farmers Federation (EAFF) and the Eastern African Grain Council-Regional Agricultural Trade Intelligence (EAGC-RATIN), which deal with the promotion of the maize, soybean and wheat products trade. However, there are still non-tariff trade barriers (NTBs) such as technical regulations and sanitary and phytosanitary requirements which are not harmonised within the region and still inhibit trade within the area. In order to further promote EAC trade, Trócaire and other stakeholders should put pressure on EAC members to:

- Move beyond simply identifying and discussing NTBs to implementing regulatory reforms and reducing measures that restrict trade. A legally binding mechanism with sanctions for noncompliance would help to fully exploit economies of scale related to economic integration.
LIST OF ACRONYMS

ARDI  Association Rwandaise pour la promotion du Développement Intégré
BAIR  Bureau d’Appui aux Initiatives Rurales
BGM  Bakhresa Grain Milling
BRALIRWA  Brasserie et Limonaderie du Rwanda
CATALIST  Catalyze - Accelerated Agricultural Intensification for Social and Environmental Stability in Africa’s Great Lakes Region
CIMMYT  International Maize and Wheat Improvement Center
CIP  Crop Intensification Programme
COAMV  Coopérative des Agriculteurs de Maïs dans la région des Volcans
COCOF  Conseil Consultatif des Femmes
COMPETE  Competitiveness and Trade Expansion
CRS  Catholic Relief Services
CSB  Corn Soya Blend
DRC  Democratic Republic of the Congo
DUHAMIC ADRI  Duhanira Amajambere y’Icyaro
EAC  East African Community
EAFF  Eastern Africa Farmers Federation
EAGC-RATIN  Eastern African Grain Council-Regional Agricultural Trade Intelligence
EDPRS  Economic Development and Poverty reduction Strategy
ENAS Nkubili  Enterprise Nkubili Alfred & Sons
FAO  Food and Agriculture Organization
GoR  Government of Rwanda
GIZ  German Agency for International Technical Cooperation
IFDC  International Fertilizer Development Center
IMF  International Monetary Fund
IPFG  Initiative pour la Promotion de la Famille et du Genre
ISAR  Institut des Sciences Agronomiques du Rwanda
MINAGRI  Ministry of Agriculture and Animal Resources
MINECOFIN  Ministry of Economic Planning and Finance
MINIMEX  Minoteries – Import – Export
NAP  National Agricultural Policy
Maize planting season is approaching in Rwanda and farmers at a communal farm prepare the land.
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Zones with high potential for maize production</td>
<td>4</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Zones with high potential for wheat production</td>
<td>5</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Zones with high potential for soybean production</td>
<td>7</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Forecasted Rwandan demand for maize, wheat and soybean grains 2011-2020</td>
<td>19</td>
</tr>
<tr>
<td>Figure 5</td>
<td>EAC annual average of exports and imports of wheat, soybean oil, maize, wheat flour, maize flour and soybeans (tonnes)</td>
<td>26</td>
</tr>
<tr>
<td>Figure 6</td>
<td>EAC total imports and production of wheat (tonnes)</td>
<td>26</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Total Rwanda imports from the EAC community 2005-2010 (tonnes)</td>
<td>28</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Rwanda maize production and imports (tonnes)</td>
<td>29</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Rwanda maize exports 2005-2010 (tonnes)</td>
<td>30</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Rwanda wheat production and imports (tonnes)</td>
<td>31</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Rwandan exports of wheat flour 2005 - 2010 (tonnes)</td>
<td>32</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1: Trends in maize production 2005-2011 5
Table 2: Trends in wheat production 2005 - 2011 6
Table 3: Trend in soybean production 2005 - 2011 7
Table 4: Major actors in maize processing in Rwanda 8
Table 5: Major actors in wheat processing in Rwanda 10
Table 6: Gross margins for maize, soybean and wheat production 12
Table 7: Rwandan production and imports of wheat, maize and soybean grains (tonnes) 17
Table 8: Rwandan exports of wheat, maize and soybean grains and their derived products (tonnes) 18
Table 9: Situation of EAC production and imports of maize, wheat and soybean (tonnes) 20
Table 10: Total intra-EAC trade and EAC imports of wheat, maize and soybean derived products (tonnes) 20
Table 11: Main sources and quantities of Rwandan maize grains imports (tonnes) 22
Table 12: Main sources and quantities of Rwandan maize flour imports (tonnes) 22
Table 13: Main sources and quantities of Rwandan wheat grain imports (tonnes) 23
Table 14: Main sources and quantities of Rwandan wheat flour imports (tonnes) 23
Table 15: Estimated annual average of imports of maize grain and maize flour (tonnes) 28
Table 16: Estimated annual average of imports of wheat grain and wheat flour (tonnes) 30
1. INTRODUCTION

1.1. BACKGROUND CONTEXT

In 2000, Rwanda adopted a long-term development vision called “Vision 2020”, which aims to **transform Rwanda into a middle income country by 2020**. This vision establishes Rwanda’s development objectives based on the pillars of good governance, transformation and modernisation of the agriculture sector, development of human resources, private sector and infrastructure, promotion of regional and international economic integration, gender equality, environmental protection and sustainable management of natural resources, science and technology (MINECOFIN, 2000). It is envisaged that the implementation of this programme will promote macroeconomic stability and wealth creation in order to reduce the country’s dependency on aid (MINECOFIN 2000).

The Economic Development and Poverty Reduction Strategy 2 (EDPRS2) for Rwanda and its predecessors, the Economic Development and Poverty Reduction Strategy 1 (EDPRS1) and the Poverty Reduction Strategy Paper (PRSP), **stress the importance of the agricultural sector in the growth of the economy**. The evaluation of the progress achieved under the PRSP strategy showed that the agricultural sector provided on average 36.4 % of GDP and employed on average 80 % of the working population (MINECOFIN 2007).

*Agriculture is therefore seen as the engine of economic growth* and is being transformed with the aim of equipping Rwanda with a modern and commercial agricultural sector. It is hoped that, over time, a strong agricultural sector will stimulate growth in other sectors of the economy. According to the strategic plan for the Ministry of Agriculture and Animal Resources (MINAGRI), the sector needs to develop agricultural value chains, which complement the natural environment in Rwanda’s different agricultural regions. By exploiting comparative advantages, Rwandan farmers will be well placed to maximize opportunities in domestic, regional and international markets, leading to growth in the agricultural economy which will in turn stimulate growth elsewhere in the economy (MINAGRI, 2004).

Within the above context, the MINAGRI strategic plan **promotes the intensification of agriculture** and increase of land and crop productivity through greater use of inputs (such as improved seed varieties, organic and mineral fertilisers, pesticides etc.) and improved agricultural techniques with an emphasis on improving water management and conservation (irrigation, harvesting run off, etc.). Crops identified as a priority include maize, soybeans and wheat. Therefore, this study aims to assess the trade patterns, trends, market dynamics and competitiveness for Rwandan maize, soybeans and wheat and their derived products (wheat flour, maize flour and soybean flour).

The study will focus on **the national and the East African Community (EAC) markets**, with some analysis of the market outside of the EAC. The EAC is an organisation of East African countries which facilitates trade between its members. It was founded in 1999 by Kenya, Tanzania and Uganda. Rwanda and Burundi both joined in 2007. The EAC comprises a market of approximately 120 million people, of whom between 70 to 90% earn their living either directly or indirectly from the agricultural sector (EAC Secretariat, 2006).
1.2. OBJECTIVES

This study examines information on trade patterns, trends, market dynamics and competitiveness for maize, wheat and soybean raw and processed products at local, national and regional (EAC) levels. It is hoped that the information and data contained in this report will help small scale farmers, local and international NGOs and other development stakeholders involved in the maize, wheat and soybean markets to improve their activities.

Specifically, the study

(i) analyses agricultural trade flows for maize, soybeans and wheat at a national level in Rwanda and a regional level within the EAC, with a focus on opportunities and threats for a competitive market for raw and processed products originating from Rwanda;

(ii) describes and analyses the enabling environment, including regulations, policies, strategies and institutions that govern production, processing and trade flows and identify opportunities for policy and strategic reforms as well as necessary measures to facilitate those reforms; and

(iii) provides insight and key recommendations for development agencies such as Trócaire, her partners and other development stakeholders in order to assist smallholder farmers, as well as the sector more broadly, to improve the competitiveness of their products and hence increase their access to domestic and regional markets, thus boosting pro-poor agricultural trade growth.

1.3. METHODOLOGY

The following methods were used to conduct this study:

(i) An in-depth review of existing literature and data on agriculture policies and strategies for maize, soybean and wheat value chains in Rwanda and the EAC with a focus on trade flows in maize, soybean and wheat products;

(ii) Semi structured interviews with Trócaire partners and other key stakeholders such as researchers, farmers, agronomists and traders involved in wheat, maize and soybean production and processing; and,

(iii) Statistical analysis of the information and data gathered.

1.4. STUDY LIMITATIONS

The study was limited by the shortage of available data on the trade environment for maize, wheat and soybean products at local and national levels. Most farmers and traders do not keep information on trade flows and therefore the study had to rely to a large extent on data gathered through semi structured interviews and other secondary sources.

1.5. STRUCTURE OF THE REPORT

This report is structured into five chapters. The first chapter is the introduction explaining the scope of the study; the second chapter describes the situation of maize, wheat and soybean production and processing in Rwanda; the third chapter analyses the market for maize, wheat and soybean products and the fourth chapter describes the enabling environment for trade in maize, wheat and soybean products. The fifth chapter gives the conclusions drawn from the study and recommendations.
Venuste Mukeshimana in the soybeans store at SOSOMA Industries Ltd., Kigali, Rwanda.
2. PRODUCTION AND PROCESSING OF MAIZE, SOYBEANS AND WHEAT

2.1. PRODUCTION OF MAIZE, SOYBEANS AND WHEAT

2.1.1. Maize production

Maize is grown throughout Rwanda. However, production is greatest in Nyagatare, Gatsibo, Kirehe and Bugesera Districts of the Eastern Province and in Gicumbi District of the Northern Province, where growing conditions are most favourable (USAID, 2009). The main maize varieties grown include RHM 102, ISAR M 104, ISAR M 102, ZM 607, KH 500-46A, KH 500-31A and RHM 103 known as Kagega (MINAGRI, 2012). The main diseases affecting the maize crop in Rwanda are tarcicum leaf blight, polysora rust and strigasp (RADA, 2008).

Figure 1: High potentiality zones (in light green colour) for maize production

Maize growers include individual small scale farmers, small farmers’ cooperatives, big cooperatives such as Cooperatives des Agriculteurs de Maïs dans la région des Volcans (COAMV) Akanyaru River Valley. There are also some big companies producing maize like ENAS Nkubili and Maizerie de Mukamira. Some initiatives are supported by NGOs and others are purely private.
The Government of Rwanda’s *Crop Intensification Programme (CIP)*, which began in 2007, has resulted in significant increases in the national production of maize. The CIP’s main goals are to increase agricultural productivity in high-potential food crops and to ensure food security and self-sufficiency through increasing access to productive inputs (fertilisers and seeds), improved water use (improvement of irrigation), and increasing the area under cultivation (marshland development). CIP implementation enabled the maize yield to quadruple to 2.3 tonnes per ha by 2010 (*IFDC, 2010*) and the area under maize production to increase by 30%, as highlighted in Table 1. However, there is scope to increase the current yield of maize as it has not yet reached the maximum potential yield, estimated at 5 tonnes/ha (*RADA, 2008*).

### Table 1: Trends of maize production for 2005-2011 period

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tonnes)</th>
<th>Area harvested (ha)</th>
<th>Yield (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>97,251</td>
<td>109,400</td>
<td>889</td>
</tr>
<tr>
<td>2006</td>
<td>91,813</td>
<td>114,836</td>
<td>800</td>
</tr>
<tr>
<td>2007</td>
<td>102,000</td>
<td>141,168</td>
<td>723</td>
</tr>
<tr>
<td>2008</td>
<td>167,000</td>
<td>144,896</td>
<td>1,153</td>
</tr>
<tr>
<td>2009</td>
<td>286,946</td>
<td>147,129</td>
<td>1,950</td>
</tr>
<tr>
<td>2010</td>
<td>432,404</td>
<td>184,658</td>
<td>2,342</td>
</tr>
<tr>
<td>2011</td>
<td>525,679</td>
<td>256,000</td>
<td>2534</td>
</tr>
</tbody>
</table>

Source: FAOSTAT(2012) and MINAGRI(2010)

#### 2.1.2. Wheat Production

Wheat was introduced to Rwanda at the beginning of the nineteenth century by European missionaries. Conditions are most favourable for wheat production in Musanze, Gicumbi and Rurindo Districts in the Northern Province, Nyabihu District in the Western Province, and, Nyamagabe and Nyaruguru Districts in the Southern Province (*USAID, 2009*).
Currently the wheat varieties grown include EN161, KS Mwamba, EN48 and Musama. The Musama variety is most prevalent, whilst the popularity of the other varieties is slowly growing. All wheat is produced by small scale farmers, either individually or grouped in cooperatives. Almost all cooperatives are assisted by local NGOs such as Bureau d’Appui aux Initiatives Rurales (BAIR), Union des Cooperatives Agricoles de Gikongoro (UNICOOPAGI), Union des Coopératives des Blés (UNICOBLE), Réseau des Organisations Paysannes du Rwanda (ROPARWA), Caritas, etc. The main diseases affecting wheat include yellow rust, stem rust, powdery mildew and chnootribasimilis (RADA, 2008).

Efforts aimed at promoting wheat production in Rwanda started three decades ago. Since then, the area dedicated to wheat cultivation has increased significantly to over 44,000 ha in 2011. However, wheat production remains modest at just over 90,000 tonnes in 2011, given the potential market for the crop. The near quadrupling of wheat production, since the introduction of the CIP in 2007 has been mostly driven by production activity, rather than as a response to any particular new or emerging market development. The current yield, which is estimated at around 2 tonnes per ha is below the potential yield which is estimated at between 3 to 4 tonnes/ha (RADA, 2008).

Table 2: Trends in wheat production (2005 – 2011)

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (tons)</td>
<td>21,942</td>
<td>19,549</td>
<td>24,633</td>
<td>67,869</td>
<td>72,479</td>
<td>77,193</td>
<td>90,684</td>
</tr>
<tr>
<td>Area harvested (ha)</td>
<td>24,157</td>
<td>22,972</td>
<td>27,528</td>
<td>52,336</td>
<td>42,438</td>
<td>49,386</td>
<td>44,284</td>
</tr>
<tr>
<td>Yield (kg/ha)</td>
<td>908</td>
<td>851</td>
<td>895</td>
<td>1,297</td>
<td>1,708</td>
<td>1,563</td>
<td>2,049</td>
</tr>
</tbody>
</table>

Source: Author on the basis of data of FAOSTAT (2012) and MINAGRI (2010)

2.1.3. Soybean production

Soybean was introduced into Rwanda in 1930 (Mujawamariya, 2012). The areas most suitable for soybean production are Nyagatare, Gatsibo, Kirehe and Bugeesa Districts in the Eastern Province and Gicumbi District in the Northern Province (USAID, 2009).

Currently, the soybean varieties cultivated are Peka 6, Bossier, Ogden, Duiker, 449/16, Soprosoy, Yezumutima, Buki and 1740-2E (Mujawamariya, 2012). The main diseases affecting soybean are lamprosemia and pyrenochaetagalycines (RADA, 2008).
Section 2  Production and Processing of Maize, Soybeans and Wheat

Soybean is produced mainly by small-scale farmers, either individually or grouped in cooperatives. Some are assisted by NGOs such as Duhanira Amajambyere y’icyaro (DUHAMI-ADRI), Association Rwandaise pour la promotion du Développement Intégré (ARDI), Conseil Consultatif des Femmes (COCOF), etc. There are plans, under the International Fertiliser Development Center (IFDC) CATALIST project, to establish a 700 ha soybean farm near Akagera, and to establish contracts with 7,000 small-scale farmers for soybean production. It is hoped that this soybean produce will then supply an oil and cake processing factory which will be established in Kayonza (USAID, 2009).

The adoption of soybean has been slow despite government efforts to promote the crop to farmers through the CIP. Although there were some initial increases at the start of the CIP, yields and production still remain low. Currently the soybean yield can be estimated at around 800kg/ha while the potential yield is estimated at between 1.2-1.6 tonnes/ha (RADA, 2008).

![Figure 3: Zones with high potential for soybean production](image)

**Table 3: Trends in soybean production 2005 - 2011**

<table>
<thead>
<tr>
<th>Soybeans</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (tonnes)</td>
<td>23,703</td>
<td>27,138</td>
<td>39,819</td>
<td>50,931</td>
<td>54,000</td>
<td>57,089</td>
<td>37,426</td>
</tr>
<tr>
<td>Area harvested (ha)</td>
<td>42,120</td>
<td>42,364</td>
<td>50,238</td>
<td>61,748</td>
<td>65,731</td>
<td>72,353</td>
<td>47,981</td>
</tr>
<tr>
<td>Yield (kg/ha)</td>
<td>563</td>
<td>641</td>
<td>793</td>
<td>825</td>
<td>822</td>
<td>789</td>
<td>780</td>
</tr>
</tbody>
</table>

Source: FAOSTAT, 2012 and MINAGRI, 2010
2.2. PROCESSING OF MAIZE, SOYBEAN AND WHEAT

As with the processing of the majority of agricultural products in Rwanda, the processing of maize, wheat and soybean occurs within the informal sector through petty traders, small unregistered mills or artisanal processing. The formal processing sector – medium and larger registered mills and processing enterprises – is relatively small and functioning dramatically below installed capacity. Products produced through informal hammer mills have a shorter shelf life and need to be consumed within days. However, shelf life is not currently seen as a consumer priority (USAID, 2009).

2.2.1. Maize processing

The processing of maize in Rwanda is dominated by six processors, described below (USAID, 2009):

Table 4: Major actors in the Maize processing in Rwanda

<table>
<thead>
<tr>
<th>Processor</th>
<th>Capacity/output (tonnes/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMEX</td>
<td>52,000</td>
</tr>
<tr>
<td>COAMV</td>
<td>4,950</td>
</tr>
<tr>
<td>SOPAR</td>
<td>4,500</td>
</tr>
<tr>
<td>Maïserie de Mukamira</td>
<td>4,352</td>
</tr>
<tr>
<td>RDI</td>
<td>1,200</td>
</tr>
<tr>
<td>DUHAMIC ADRI (Through SOSOMA industries)</td>
<td>600</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>67,602</strong></td>
</tr>
</tbody>
</table>

Source: Author on the basis of data from MINAGRI, 2010 and USAID, 2009.

- **MINIMEX** is the largest processor of maize. It was established in 2005 and commenced operations in November 2006. It mainly processes imported maize from neighbouring countries such as Uganda and Tanzania and a negligible amount of locally produced maize. The company produces maize flour and maize grits (coarser ground maize) for the beer brewing company (BRALIRWA) and for cattle feed. It encounters very strong competition in the sale of maize flour from small scale producers in Kigali. MINIMEX is constrained by the low availability of local maize inputs, which means that it is not able to utilise its full production capacity and this affects its ability to make a return on its investment.

- **Coopérative des Agriculteurs de Maïs dans la région des Volcans (COAMV)** is located in the Northern Province of Rwanda, on the Ugandan border. It started its activities in 2000 and it is composed of 312 associations, with 12,323 members – all maize producers. The cooperative processes maize grain produced by its members into flour. The majority of its produce is sold in the Kigali market and in the border market with the Democratic Republic of the Congo (DRC). Its main customers are schools, who buy through contracts with delayed payment, and dealers.

- **Sociétés des Produits Animaux au Rwanda (SOPAR)**, located in Rubilizi, Kigali, is an animal feed plant and is currently not operational. It urgently needs investment to improve its infrastructure and its profitability. In the past it was producing a corn soya blend (CSB).

- **Maïserie de Mukamira** was constructed in 1987 by the Rwandan Government with the goal of producing flour and oil from maize. It was destroyed in 1994, but was then privatized in 2004 and fully rehabilitated in 2006. It reopened in January 2007, but is currently producing below its capacity due to the lack of raw materials.
Section 2  Production and Processing of Maize, Soybeans and Wheat

- **Rwanda Development Investment (RDI)** was created by the Rwanda Development Organization in 2006. RDI processes maize for cooperatives in the area formerly known as Umurara Province (this area is now mostly included within Nyagatare District). Altogether, 80% of RDI's production is maize flour and 20% is maize grits. The market for its products is mainly limited to Nyagatare District, but it also sells to schools and prisons outside of the area.

- **DUHAMIC-ADRI is an NGO which owns over 80% of the shares in SOSOMA Industries.** SOSOMA Industries is best known for UNIMIX, which is a mixture of flour of soya, maize, vitamins and mineral and for SOSOMA No. 1 and No. 2, blends of sorghum, corn and soya flour. Products are sold mainly to development organisations, with 67% of sales to organisations such as the WFP and USAID.

In addition to these big processors, there are many small grinding mills belonging to dealers in Kigali and other urban areas throughout the country. The flour produced by these small grinding mills is of low quality and is sold almost exclusively to local markets. Clients are mainly households buying small quantities for family food needs.

The poor quality of locally produced maize is another factor that affects processors. For instance, bright yellow flour is not popular in Rwanda and there is a low demand for it. Whilst Rwandan maize is cleaner than maize from Uganda, Rwandan maize generally contains different varieties and colours of grains. Mixed colour maize yields poor flour after milling, which impacts on market margins for traders. As a result, traders prefer white maize from Uganda as this is uniform in colour thereby giving a better quality of flour once processed. However, traders pointed out that maize from Nyagatare District is a uniform colour (USAID, 2009).

**Stories of Change**

**The Cooperative Level**

Our cooperative is known as KOABOBAK and we grow MAIZE and SOYBEAN crops in Nyaruguru District in the Southern Province. We started working in 2008. At that stage we met infrequently, only used traditional agricultural techniques, had low yields, no access to credit and distrusted all financial institutions.

Our lives have now changed for the better. We have increased knowledge of agricultural techniques that complement our traditional approaches and help us to increase yields. The yield from our maize plantations has increased from 2T/ha to 4T/ha.

Our cooperative now meets regularly, has increased membership and has a fully trained management committee. Thanks to this we have been able to access credit from financial institutions. This has helped us to increase our incomes greatly. For instance, from a 400,000 Rwf loan, we were able to pay for the transportation of 23.2T of harvest from NGOMA to Kigali. In Kigali we received 8,352,000 Rwf for our harvest leaving us with plenty of profit even after we paid back the loan and other expenses. The Trócaire project supported us considerably to achieve these improvements, but now we are able to function more independently.
2.2.2. Wheat processing

There are four main companies involved in wheat processing in Rwanda. These are: Bakhresa Grain Milling (BGM) Rwanda located in Kigali city, PEMBE and SOTIRU flour mills both located in the Northern Province and Nyungwe Flour Mill located in Nyamagabe District, Southern Province (currently closed).

Table 5: Major actors in wheat processing in Rwanda

<table>
<thead>
<tr>
<th>Processor</th>
<th>Capacity/output (tones/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakhresa Grain Milling (BGM) Rwanda</td>
<td>90,000</td>
</tr>
<tr>
<td>PEMBE flour mill</td>
<td>66,000</td>
</tr>
<tr>
<td>SOTIRU</td>
<td>15,000</td>
</tr>
<tr>
<td>Flour mill of Nyungwe</td>
<td>5,000</td>
</tr>
<tr>
<td>Total</td>
<td>176,000</td>
</tr>
</tbody>
</table>

Source: Author on the basis of data from MINAGRI (2010) and USAID (2009).

Bakhresa Grain Milling (BGM) Rwanda is a branch of one of East Africa’s largest flour millers, BGM, which has its headquarters in Tanzania. BGM Rwanda started commercial production in Rwanda in May 2011. *Local farmers supply the company with a meagre 0.1% of its wheat*. The rest is imported from the US, Canada, Brazil, Argentina, Russia, Ukraine and Australia.

PEMBE flour mill, Byumba, is a branch of the Kenyan company, PEMBE, which owns several flour mills in the sub-region: seven in Kenya, one in Tanzania and one in Uganda. *It processes imported wheat from Russia*. The company is currently trying to source more wheat grain locally and hopes to use local produce for 20% of its needs in the near future. The company plans to provide flour to Rwanda, Burundi and DRC (USAID, 2009).

Société des Travaux Industriels du Rwanda (SOTIRU) was formerly a Rwandan-Belgian company, known as ETIRU, which closed in 1995 and was then sold in 2001 to a group of Rwandan investors. *It sources 20% of its wheat from local producers*. SOTIRU processes four products from wheat: Flour n°1 intended for the bread making/bakeries, Flour n°2 for porridge, Flour n°3 for small ruminants feed and Flour n°4 for large ruminants feed (USAID, 2009).

Nyungwe Flour Mill ceased operations in 2010, but *plans to reopen in the near future*. In 2009, the flour mill was producing at only 20% of its capacity. At the time of its closure it was producing three products, wheat flour for bakeries, flour for porridge and “son de blé” (wheat bran) for animal feeds (USAID, 2009).

As for maize production, there are also numerous small grinding mills that are well equipped and process wheat. These small mills belong either to dealers or to artisans who work on customer demand or occasional contracts. The artisanal wheat flour is sold to families who use the flour for porridge (especially in the area of Gikongoro), doughnuts and bakers who blend the flour of local wheat with the flour of imported wheat (USAID, 2009).

2.2.3. Soybean processing

Soybean processing in Rwanda is dominated by the Kigali-based *SOSOMA Industries Ltd*. SOSOMA Industries are engaged in flour production and marketing. Products include soybean flour, maize flour, sorghum flour and SOSOMA n° 1 and n° 2. Most of these products are sold in supermarkets throughout the country. The company purchases raw materials inputs (soybean, maize and sorghum grains) from farmer cooperatives. The company purchases 300 tonnes of soybean a year of which 220 tons is imported from regional markets, mainly Uganda. *Only about 26% of its soybean is sourced* locally (Mujawamariya, 2012).
Apart from SOSOMA industries, there are other small factories involved in soybean processing including Conseil Consultatif Féminin (COCOF), Cooperative ABAHUJE and Initiative pour la Promotion de la Famille et du Genre (IPFG). Also, as mentioned above, there will be a new soybean oil factory in Kayonza District in the Eastern Province, which is expected to start processing soybean towards the end of 2013.

COCOF is a non-governmental initiative located in Kamonyi District, Musambira Sector. It works with the local population, especially women trained in the cultivation and small scale processing of soybean. COCOF has a production unit which transforms soybean into various consumable products such as soya flour, composite flour made of soybean, maize and sorghum, fortified flour, tofu and soymilk. Its products are mainly sold in Muhanga Town, Kigali City and Kamonyi District.

The ABAHUJE cooperative was established in 1998 and has its headquarters in Ruhango District, Ruhango Sector. The ABAHUJE cooperative promotes soybean production and processing. The cooperative believes that this strategy will ensure the food security of the local population. It has a factory producing soybean milk, tofu, animal feeds, etc. It processes 1.5 tonnes of soybeans per year. The products are mainly sold locally.

IPFG is a non-profit organisation created in 2002. It is based in Gasaka Sector, Nyamagabe District in the Southern Province. Since 2006, IPFG has been processing cereals such as sorghum, wheat, maize, millet and soybean in order to enhance the quality and shelf life of these cereals. It has a unit that processes seven products: composite flour (Komezubuzima), wheat flour, millet flour, soybean flour, red sorghum flour, roasted soybean coffee, soymilk residuals, tofu, maize flour and soymilk. IPFG has one shop called Komezubuzima in Nyamagabe District, Gasaka Sector. Its products are almost exclusively sold to consumers at a local level in Nyamagabe Town.

2.3. CONTRIBUTION OF MAIZE, SOYBEANS AND WHEAT TO FOOD SECURITY AND HOUSEHOLD INCOME

Household level food security is an issue for the rural population. Based on anecdotal evidence, it is estimated that producers retain between 20% - 40% of their farm production for household consumption. Cash from the sale of the remaining 60% - 80% of production must cover their daily living expenses as well as their entire investment in inputs and improved production practices (USAID, 2009). However, in some areas, farmers use more than 40% of their produce for household consumption.

Available estimates show that maize producers retain 52% and soybean producers 58% of their produce for household consumption (USAID, 2009). These rates show that maize and soybean are contributing to the food security of their producers. For wheat, there is also a sizeable percentage of produce that is consumed at the producer level. However, the percentage is low compared to maize and soybean. This indicates that wheat is a more commercially oriented crop in the Rwandan context.

Furthermore, the produce that is sold on the market is also contributing to the food security of the purchasers of these products. According to the International Monetary Fund (IMF), the CIP has led to an increase in the production of maize, wheat, rice and Irish potatoes, which in turn contributes to the improvement of food security at national level. The average dietary intake of the Rwandan population increased from 1900 kilocalories (kcal) per person per day in 2007 to 2100 kcal per person per day in 2009 (IMF, 2011).
With respect to the *contribution of maize, soybeans and wheat to household income*, the following table shows the margins that farmers can obtain from the cultivation of these crops:

**Table 6: Gross margins for maize, soybean and wheat production**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Cost of production (Frw/1kg)</th>
<th>Yield (Kg/ha)</th>
<th>Total cost of production (Frw/ha)</th>
<th>Market price (Frw/kg)</th>
<th>Total income (Frw/ha)</th>
<th>Gross margin (Frw/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>69</td>
<td>2,000</td>
<td>138,000</td>
<td>200</td>
<td>400,000</td>
<td>262,000</td>
</tr>
<tr>
<td>Wheat</td>
<td>87.8</td>
<td>3,000</td>
<td>263,400</td>
<td>280</td>
<td>840,000</td>
<td>576,600</td>
</tr>
<tr>
<td>Soybean</td>
<td>43.8</td>
<td>1,200</td>
<td>52,560</td>
<td>250</td>
<td>300,000</td>
<td>247,440</td>
</tr>
</tbody>
</table>

Source: Author’s calculations on the basis of data collected by USAID (2009) and Mujawamariya (2012) and from the interviews to bulk collectors.

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**Stories of Change**

**The Farmer Level**

My name is *NYIRANSABIMANA Jacqueline* and I live in Nyagatare District in the Eastern Province. During the genocide I lost my husband and all my extended family and was left to bring up my young children on my own. With little in the way of support, my family and I struggled greatly. I eventually remarried, but our situation remained the same.

However, things started to change in 2006 when I joined a *local cooperative*, which the Rwanda Development Organisation (RDO) and TROCAIRE were establishing. Initially, I was reticent about joining the cooperative, as I did not like to share my family’s problems with others and I didn’t believe that agriculture could improve my situation. Before, when I attempted to grow crops, it was on a small plot with a mix of cassava, beans and maize and the yields were insufficient to meet the needs of my children. At first, I was unsure about RDO’s approach and didn’t engage as much as other cooperative members but, once I began to see the impact which the programme was having on the lives of others, I became more engaged. I started to attend all the trainings and study tours that were being offered by RDO. Over time, this training helped me to *increase the yield* of my small holding, from 70 kg/ha of *cassava, beans and maize* in a season to 2.5 tonnes/ha in a season and I became one of the lead farmers in the village. From my *increased income*, I started rearing poultry before switching to goats and then on to cows. I am now able to send my younger children to school and have recently built myself a house. I attribute this success to RDO and its approach that helped me and others to improve our standard of living through working together. I thank God that I have been able to overcome my problems and become a respected woman in my community. Local leaders now consult with me on community matters and today *I am a leader* on the local women’s council.

Many women wish to achieve what I have, yet I am still motivated to improve the situation of my family. My advice to all those who are still poor is to show determination and believe that you can bring about change in your own life. There are so many detractors who belittle your efforts, but it is important to learn from women like me, who show that *change is possible*, if you work hard and believe in yourself.
The cost of production includes labour for cropping activities, seeds and other inputs used in crop production. The cost of producing one kilogram of maize is Frw 69, one kilogram of wheat is Frw 87.9 and one kilogram of soybean is Frw 43.8. In calculating these costs, intensive production conditions have been assumed. The yield which has been taken into consideration is the minimum potential yield. The market price is the average price paid last year for maize, soybean and wheat producers by bulk collectors.

Based on the current average yields for maize, soybean and wheat and a land holding of 0.2 ha (the minimum arable land holding per household according to USAID, 2009), each household cultivating maize, soybean and wheat can expect to realise gross margins of at least Frw 52,400; Frw 115,320, and Frw 49,488 respectively per cropping season. Taking into account that there are two cropping seasons per year for maize and soybean and that part of the production is consumed at a household level, maize and soybean crops are respectively contributing at least Frw 52,400 and Frw 49,488 to producer’s income per year. In terms of percentages, this can be estimated as a minimum of 16% of household income per year for maize and 15% for soybean. The minimum contribution of wheat to household’s income should be significantly more than 16% because wheat is less often consumed at a household level. These figures demonstrate the importance of these crops to small farmers.

2.4. MAIN CHALLENGES AND CONSTRAINTS IN PRODUCING AND PROCESSING MAIZE, SOYBEAN AND WHEAT

In general, agriculture in Rwanda consists of subsistence farming characterised by low productivity of both plant and animal breeds on fragmented small farms (national average farm size is 0.75 ha per household), with basic farm management practices (MINAGRI, 2013). The farming community is mostly rural based and illiterate, with very limited access to farm credit to purchase the farming inputs needed (MINAGRI, 2004).

Farming operations undertaken with hand tools represent 98.5% of total farming operations, while the use of animal traction and tractors is 1.4% and 0.1% respectively (MINAGRI, 2010). Other forms of mechanisation are limited to use for harvesting fodder for animal feeds. The sector also suffers from lack of adequate rural infrastructure, insufficient agricultural markets and processing facilities, weak agricultural research and extension services and very low levels of investment.

More specifically, the main challenges and constraints in common for producing and processing maize, wheat and soybean include:

(i) very low volumes of Rwandan production compared to demand, so that processors are forced to import large volumes of raw materials;
(ii) poor road infrastructure and high transport costs hamper the transportation of produce to markets and reduce the profit made by producers;
(iii) small-scale farmers have limited experience of producing crops on a commercial scale and need substantial training;
(iv) post-harvest losses, such as losses during transport, threshing and winnowing, rotting caused by storage of moist grain; and
(v) lack of consistently available, reliable data on prices in major markets; hence producers and cooperatives are not well informed at the time of sale. (MINAGRI, 2011).
The main challenges and constraints for **maize production and processing** are:

i. **Strong market demand for fresh maize** – this makes it difficult to convince farmers to wait for the harvest of the dry product, especially in high altitude areas where the period from sowing to harvest is extremely long and drying of maize is difficult;

ii. **Drought in eastern Rwanda**, which seriously reduces maize production, with resulting impacts on buyers, processors and farmers;

iii. **Lower priced maize available from neighbouring countries** - for example, the average monthly price for maize from April to December 2012 was US$ 0.45 in Kigali Market, US$ 0.37 in Kampala market and US$ 0.29 in Iringa market, Tanzania, making it difficult for Rwandan maize to compete;

iv. **Lack of trust between maize producer organisations and buyers**;

v. **The long period from sowing to harvest** - farmers in high altitude zones are discouraged from growing maize;

vi. **Under utilization of maize storage facilities** - due to the lack of maize available on the local market;

vii. **Maize cooperatives and dealers do not have appropriate training on post-harvest handling** including storage management (MINAGRI, 2011).

The main challenges and constraints for **wheat production and processing** are:

i. **The difficulty of drying wheat to the required moisture level** (14%) in most production locations;

ii. **The processing and storage facilities** available for wheat cooperatives are largely small and basic, leading to losses during milling;

iii. Most wheat cooperatives lack **adequate drying and storage facilities** as well as negotiation and management skills;

iv. **Poor relationships between wheat producers and millers** discourage wheat production;

v. Production suffers once **technical and financial assistance provided by NGOs and other stakeholders to wheat cooperatives ends**

vi. **The poor quality of final wheat and presence of impurities (such as stones and other foreign matter)** - due to use of manual threshing, winnowing and drying processes, and

vii. **The MUSAMA variety of wheat that is most popular with farmers is seen as a problem** as **wheat millers complain that this gives poor quality flour** which is not suitable for bread (MINAGRI, 2011).
Section 2  Production and Processing of Maize, Soybeans and Wheat

The principal challenges and constraints for soybean production and processing include:

i. **The lack of rhizobium**, which must be used to protect the seed prior to sowing in order to facilitate nitrogen fixation which ensures good crop growth and productivity;

ii. As **soybean is not considered a priority crop** within Rwanda’s crop regionalisation policy, it is not likely that many farmers’ organisations or entrepreneurs will grow this crop, unless a large commercial demand develops;

iii. There is **limited availability of soybean seeds**;

iv. The **processing and storage facilities** available to soybean growers are largely small and basic, which leads to losses during milling;

v. There are **poor linkages between extension services and soybean growers**;

vi. Soybean is a rain fed crop which is **vulnerable to drought**. Given that irrigation facilities are still very limited within Rwandan agriculture, this makes investment in soybean production risky;

vii. **The number of consumers for soybean products is low**, due to the fact that the Rwandan population are not aware of its nutritional value; and

viii. The **market value for soybean grain is low** when compared to other crops (MINAGRI, 2011).

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**Stories of Change**

**Beneficiary of Micro Credit**

I am MUKAMANA Euphrasie and I am 47 years old. I live in Karama, Huye District in the Southern Province. Before RESEAU INTERDIOCESAIN DE MICROFINANCE (RIM) Ltd started working in our area, my situation was dire. My husband was in jail and my children and I were living in great poverty. I would spend the whole day cultivating our small plot of land in order to grow small amounts of beans and maize to feed my family.

The amount I was producing was insufficient to meet our needs and I knew that I needed to find a way to increase my income so that my family could survive and get an education. That is when I went to RIM and asked for a loan of 30 000 Frws. Although I had no collateral, RIM agreed to give me the loan. They believed in me and knew that although I was poor, I had good ideas. I wanted to diversify and start to produce and sell the beer of sorghum and banana beer. With the loan I received, I was able to do just that and very quickly my income increased. With my increased income, I was able to pay my children’s school fees and ensure that they had enough to eat each day.

I have continued to receive loans from RIM Ltd, which have helped me to purchase pigs and cows, which have helped me to fertilize my fields to provide milk to my family. Now my family is healthy, happy and free from extreme poverty. My neighbours have been surprised with how I have turned around my situation. I am now very respected in the local community and have recently been elected onto the Umudugudu Committee. RIM Ltd has helped me and my family to achieve all of this and without it I would not have been able to make the progress that I have.
Domitille Nyirabavakure (6) at her family home using a traditional wooden pestle and mortar to grind soybean grain.
3. MARKET ANALYSIS FOR MAIZE, SOYBEAN AND WHEAT PRODUCTS

3.1. INTRODUCTION

Within Rwanda, maize, soybean and wheat products are traded domestically as well as within EAC community and other international markets. The following tables summarise the situation of *domestic production and imports* of maize, soybean and wheat grains for the 2005-2010 period and for imports of wheat flour.

Table 7: Rwandan production and imports of wheat, maize and soybean grains (tonnes)

<table>
<thead>
<tr>
<th>Product</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>% of internal demand in 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of maize</td>
<td>97251</td>
<td>91813</td>
<td>102000</td>
<td>167000</td>
<td>286946</td>
<td>432404</td>
<td>79%</td>
</tr>
<tr>
<td>Total imports of maize</td>
<td>468</td>
<td>29067</td>
<td>30938</td>
<td>3519</td>
<td>44459</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>from EAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total imports from</td>
<td>15917</td>
<td>9</td>
<td>14269</td>
<td>4272</td>
<td>8498</td>
<td>118064</td>
<td>21%</td>
</tr>
<tr>
<td>EAC non-members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>113636</td>
<td>120889</td>
<td>147207</td>
<td>174791</td>
<td>339903</td>
<td>594927</td>
<td></td>
</tr>
<tr>
<td>Production of wheat</td>
<td>21942</td>
<td>19549</td>
<td>24633</td>
<td>67869</td>
<td>72479</td>
<td>77193</td>
<td>59%</td>
</tr>
<tr>
<td>Imports of wheat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from EAC</td>
<td>0</td>
<td>1</td>
<td>1654</td>
<td>2644</td>
<td>3100</td>
<td>3100</td>
<td>2%</td>
</tr>
<tr>
<td>Imports of wheat</td>
<td>2372</td>
<td>5073</td>
<td>4084</td>
<td>4226</td>
<td>23064</td>
<td>50679</td>
<td>39%</td>
</tr>
<tr>
<td>EAC non-members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24314</td>
<td>24623</td>
<td>30371</td>
<td>74739</td>
<td>98643</td>
<td>130972</td>
<td></td>
</tr>
<tr>
<td>Production of soybean</td>
<td>23703</td>
<td>27138</td>
<td>39819</td>
<td>50931</td>
<td>54000</td>
<td>57089</td>
<td>97%</td>
</tr>
<tr>
<td>Imports from EAC</td>
<td>0</td>
<td>116</td>
<td>81</td>
<td>60</td>
<td>274</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Imports from EAC</td>
<td>345</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1201</td>
<td>1397</td>
<td>2%</td>
</tr>
<tr>
<td>non-members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24048</td>
<td>27257</td>
<td>39900</td>
<td>50991</td>
<td>55475</td>
<td>58760</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx
Rwanda also exports a small amount of maize flour, wheat flour, maize grain, wheat grain and soybean grain. The following table summarises the situation of exports of these products.

**Table 8**: Rwandan exports of wheat, maize and soybean grains and their derived products (tonnes)

<table>
<thead>
<tr>
<th>Product</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export of maize flour</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2394</td>
<td>253</td>
<td>2512</td>
</tr>
<tr>
<td>Export of wheat flour</td>
<td>38</td>
<td>0</td>
<td>762</td>
<td>1234</td>
<td>67</td>
<td>133</td>
</tr>
<tr>
<td>Export of maize</td>
<td>5</td>
<td>552</td>
<td>1465</td>
<td>138</td>
<td>175</td>
<td>1633</td>
</tr>
<tr>
<td>Export of wheat</td>
<td>0</td>
<td>0</td>
<td>483</td>
<td>3296</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Export of soybean</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx

Taking 2010 as the base year, leaving out the exports (as they are insignificant) and assuming a population of 10 million (in 2010), the estimated demand for maize, wheat and soybean grains for the 2011-2020 period would be as portrayed in Figure 4 below:
Section 3

Market Analysis for Maize, Soybean and Wheat Products

Figure 4: Forecasted Rwandan demand for maize, wheat and soybean grains 2011-2020.
Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx
Trócaire

EAC Trade Flow Analysis

The situation of maize, wheat and soybean grain production and trade at EAC community level is summarised in the following table:

Table 9: Situation of EAC production and imports of maize, wheat and soybean (tonnes)

<table>
<thead>
<tr>
<th>Products</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of maize within EAC</td>
<td>7439421</td>
<td>8136858</td>
<td>8067297</td>
<td>7473721</td>
<td>7442525</td>
<td>9890006</td>
<td>48449828</td>
<td>99%</td>
</tr>
<tr>
<td>Total intra-EAC trade</td>
<td>227411</td>
<td>494257</td>
<td>114506</td>
<td>248670</td>
<td>1534951</td>
<td>315642</td>
<td>2935337</td>
<td>6%</td>
</tr>
<tr>
<td>Total imports of maize from EAC non-members</td>
<td>34674</td>
<td>69169</td>
<td>132988</td>
<td>68551</td>
<td>68538</td>
<td>73213</td>
<td>447133</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7474095</td>
<td>8206027</td>
<td>8200285</td>
<td>7542272</td>
<td>7511063</td>
<td>9963219</td>
<td>48896961</td>
<td></td>
</tr>
<tr>
<td>Production of wheat within EAC</td>
<td>516821</td>
<td>484749</td>
<td>456740</td>
<td>518061</td>
<td>412763</td>
<td>719721</td>
<td>3108845</td>
<td>23%</td>
</tr>
<tr>
<td>Total intra-EAC trade</td>
<td>19937</td>
<td>4361</td>
<td>10084</td>
<td>3635</td>
<td>6453</td>
<td>4193</td>
<td>48683</td>
<td>0.4%</td>
</tr>
<tr>
<td>Imports of wheat from EAC non-members</td>
<td>1446858</td>
<td>1684747</td>
<td>1819082</td>
<td>1270244</td>
<td>2065212</td>
<td>2309286</td>
<td>10595429</td>
<td>77%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1963679</td>
<td>2169496</td>
<td>2275822</td>
<td>1788295</td>
<td>2477975</td>
<td>3029007</td>
<td>13704274</td>
<td></td>
</tr>
<tr>
<td>Production of soybean</td>
<td>189534</td>
<td>212215</td>
<td>223922</td>
<td>239274</td>
<td>242590</td>
<td>239789</td>
<td>1347324</td>
<td>97%</td>
</tr>
<tr>
<td>Total intra-EAC trade</td>
<td>332</td>
<td>1123</td>
<td>5796</td>
<td>6077</td>
<td>11139</td>
<td>15232</td>
<td>39699</td>
<td>3%</td>
</tr>
<tr>
<td>Imports of soybean from EAC non-members</td>
<td>5806</td>
<td>9188</td>
<td>4248</td>
<td>4200</td>
<td>12880</td>
<td>5888</td>
<td>42210</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>195340</td>
<td>221403</td>
<td>228170</td>
<td>243474</td>
<td>255470</td>
<td>245677</td>
<td>1389534</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx

The total intra-EAC trade and EAC imports of wheat, maize and soybean derived products is summarised in the following table:

Table 10: Total intra-EAC trade and EAC imports of wheat, maize and soybean derived products (tonnes)

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total intra-EAC trade of maize flour</td>
<td>4548</td>
<td>6075</td>
<td>2914</td>
<td>5102</td>
<td>2475</td>
<td>3849</td>
<td></td>
</tr>
<tr>
<td>Total imports of maize flour from EAC non-members</td>
<td>62731</td>
<td>25308</td>
<td>81264</td>
<td>52641</td>
<td>69292</td>
<td>46600</td>
<td></td>
</tr>
<tr>
<td>Total intra-EAC trade of wheat flour</td>
<td>24512</td>
<td>32112</td>
<td>31630</td>
<td>21543</td>
<td>10024</td>
<td>8474</td>
<td></td>
</tr>
<tr>
<td>Imports of wheat flour from EAC non-members</td>
<td>9793</td>
<td>9354</td>
<td>44315</td>
<td>29276</td>
<td>73901</td>
<td>95480</td>
<td></td>
</tr>
<tr>
<td>Total intra-EAC trade of soybean oil</td>
<td>272</td>
<td>582</td>
<td>40</td>
<td>211</td>
<td>690</td>
<td>205</td>
<td></td>
</tr>
<tr>
<td>Imports of soybean oil from EAC non-members</td>
<td>9547</td>
<td>7592</td>
<td>24647</td>
<td>22291</td>
<td>8092</td>
<td>19820</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx
3.2. NATIONAL MARKETING OF MAIZE, SOYBEAN AND WHEAT PRODUCTS

3.2.1. Maize marketing

Local demand is not met by current levels of maize production within Rwanda. Hence the gap is filled with imports from other countries - mainly from neighbouring EAC countries. According to Diao et al. (2010), imports of maize account for at least 20% of domestic consumption.

Market for domestic maize production
Marketing of domestic maize production involves four principal actors: individual farmers, farmers’ cooperatives, traders and agro processors:

- **Individual farmers** are the first link in the marketing chain. They generally sell during harvest and rarely store any produce due to immediate cash needs. They usually sell small quantities and enjoy little bargaining power. They have limited market information and as a result they are essentially price-takers. They do not use weighing balances for selling their products; using the “Mironko” basket instead. Transactions are either carried out on farms at household level or at local markets. At the market, individual farmers interact with individual consumers and rural collectors (rural traders). Individual farmers buy back maize later for use as seed and food.

- **Farmers’ cooperatives** - farmers who are members can sell their maize through their cooperatives. The cooperatives collect the production of their members and negotiate prices with clients. Unlike individual farmers, cooperative members are able to obtain market information and as they sell larger quantities of maize as a group, they enjoy some bargaining power. These farmers also buy back maize for food but the seed is usually provided by the cooperatives.

- **Maize traders** are composed of rural traders (sometimes referred to as rural collectors), travelling traders, wholesalers and retail traders. There are a large number of rural traders in rural markets and they play a vital role in collecting produce from farmers, given the fragmented nature of production. They wait for farmers to sell maize at rural markets or on roads near rural markets. They also move from farm to farm purchasing small quantities. Rural traders also use the “Mironko” basket as a measure for the maize they buy and pay farmers in cash. Rural traders store the produce they buy and wait to supply larger orders from travelling traders. They also retail maize making a higher margin of profit. Some rural traders act on behalf of travelling traders. **Travelling traders** purchase maize from either farmers and/or rural traders in weekly rural markets and then weigh and pack the maize for urban markets, mainly the Nyabugogo wholesale market in Kigali. Sometimes, travelling traders sell small quantities of maize in weekly rural markets. Most travelling traders have good contacts with transporters. The tonnage of the trucks varies from 3.5 to 5 tonnes. These trucks dominate transport from the supply areas to the important Nyabugogo wholesale market in Kigali (USAID, 2009). **The wholesalers** mainly operate in Nyabugogo market, supplying the Kigali urban area and providing a centre for maize supplies from within and outside of Rwanda. The wholesalers play an important role in maize marketing as they maintain stocks and are able to sell products onwards on demand. **The retail traders** are located in different urban markets throughout Rwanda, distributing maize through retail markets, such as stalls or small retail shops.

- **The agro-processors** purchase the maize as a raw material for processing. The practice of selling directly to agro-processors is less developed within Rwanda for many reasons. The largest volumes of maize are sold in raw form, which implies that every farmer sells his own maize. **Domestic production does not cover the demand from agro-processors**. Household level grinding mills compete with these big agro-processors (USAID, 2009).
Marketing of imported maize

*Nyabugogo market* is the main wholesale market where imported maize is received. Large warehouses in this market provide a centre for maize supplies from inside and outside the country. This market is *home to dealers who import into Rwanda and others who export to Uganda*. Occasionally, traders deal with each other directly and in a few cases, through middlemen, commissioners or brokers. The majority of imported grain is intended for the Kigali City market as there is high demand there from processors. Small scale processors, mainly in rural areas also process some maize, but usually source maize locally. Some dealers/processors in other areas of the country also buy maize from Nyabugogo market. Purchases do not usually involve large quantities because provincial dealers have limited capital. In general, purchases involve 5 - 10 tonnes per dealer (USAID, 2009).

Dealers in *Musanze District, Northern Province* import small quantities of maize from Uganda through the border post of Cyanika and in *Rubavu District, Western Province*, dealers also import small quantities of maize from the Democratic Republic of the Congo (DRC). The maize from DRC is a yellow corn which is used to manufacture a yellow paste, which is popular with some consumers. Tanzania, albeit on a lower scale, also supplies Rwanda with maize. Uganda dominates the import market for maize flour. Industrial processors also import maize grains from outside of the country.

<table>
<thead>
<tr>
<th>Table 11: Main sources and quantities of Rwandan maize grains imports (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>2005</td>
</tr>
<tr>
<td>2006</td>
</tr>
<tr>
<td>2007</td>
</tr>
<tr>
<td>2008</td>
</tr>
<tr>
<td>2009</td>
</tr>
<tr>
<td>2010</td>
</tr>
</tbody>
</table>


Marketing of maize flour

The largest volumes of maize flour are *sold in Kigali City*, with some smaller amounts sold in other provinces. The flour is sold to independent traders, supermarkets, restaurants and independent retailers who in turn re-sell to various buyers, such as prisons, secondary schools and NGOs (e.g. WFP, GIZ, World Vision and CRS). The flour produced by household level grinding mills is mostly sold to local consumers due to its poor quality.

<table>
<thead>
<tr>
<th>Table 12: Main sources and quantities of Rwandan maize flour imports (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>2005</td>
</tr>
<tr>
<td>2006</td>
</tr>
<tr>
<td>2007</td>
</tr>
<tr>
<td>2008</td>
</tr>
<tr>
<td>2009</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Section 3  
Market Analysis for Maize, Soybean and Wheat Products

3.2.2. Wheat marketing

Local demand is not satisfied by current wheat production, consequently, the gap is filled with imports from other countries, mainly non-neighbouring countries such as Argentina, the United Arab Emirates and the USA. According to Diao et al. (2010) imports of wheat (grain and flour) account for 20% of domestic consumption.

Table 13: Main sources and quantities of Rwandan wheat grain imports (tonnes)

<table>
<thead>
<tr>
<th>Year</th>
<th>Argentina</th>
<th>Canada</th>
<th>Kenya</th>
<th>Russian Federation</th>
<th>Uganda</th>
<th>United Arab Emirates</th>
<th>United Kingdom</th>
<th>USA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>752</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>752</td>
</tr>
<tr>
<td>2006</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2007</td>
<td>1644</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2420</td>
</tr>
<tr>
<td>2008</td>
<td>1569</td>
<td>1020</td>
<td>1624</td>
<td>8270</td>
<td>5037</td>
<td></td>
<td></td>
<td></td>
<td>4602</td>
</tr>
<tr>
<td>2009</td>
<td>5743</td>
<td>3100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22234</td>
</tr>
<tr>
<td>2010</td>
<td>2206</td>
<td>28473</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50679</td>
</tr>
<tr>
<td>Total</td>
<td>8064</td>
<td>2206</td>
<td>5764</td>
<td>28473</td>
<td>1635</td>
<td>8270</td>
<td>5037</td>
<td></td>
<td>1239</td>
</tr>
</tbody>
</table>


Table 14: Main sources and quantities of Rwandan wheat flour imports (tonnes)

<table>
<thead>
<tr>
<th>Year</th>
<th>Belgium</th>
<th>Egypt</th>
<th>Kenya</th>
<th>Uganda</th>
<th>Tanzania</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>255</td>
<td>22</td>
<td>27</td>
<td>10256</td>
<td>12353</td>
<td>22913</td>
</tr>
<tr>
<td>2006</td>
<td>308</td>
<td>822</td>
<td>184</td>
<td>16872</td>
<td>12810</td>
<td>30996</td>
</tr>
<tr>
<td>2007</td>
<td>838</td>
<td>659</td>
<td>4</td>
<td>12381</td>
<td>18553</td>
<td>32435</td>
</tr>
<tr>
<td>2008</td>
<td>1074</td>
<td>81</td>
<td>2</td>
<td>13913</td>
<td>5050</td>
<td>20120</td>
</tr>
<tr>
<td>2009</td>
<td>925</td>
<td>770</td>
<td>116</td>
<td>1305</td>
<td>3034</td>
<td>6150</td>
</tr>
<tr>
<td>Total</td>
<td>3400</td>
<td>2354</td>
<td>333</td>
<td>54727</td>
<td>51800</td>
<td>51800</td>
</tr>
</tbody>
</table>


Marketing of domestic wheat production

The main actors in the marketing of domestic wheat production are individual farmers, farmers’ cooperatives, collectors, traders (semi-wholesalers, itinerant traders and retailers) and processors.

Individual farmers are the first link in the marketing chain. The first sale is made at the time of that the crop is harvested. Farmers who belong to a cooperative may decide to sell through this structure. However, a lot of sales are made outside of cooperative structures.

Farmers usually sell lower quality wheat, that is only suitable for manual processing, to traders operating in rural markets. Some farmers also take their produce directly to dealers in the cities. If the quality of wheat is better and suitable for agro-processing, the farmer would usually take the wheat to a cooperative that s/he belongs to, which would sell the produce on to the mill.
Within cooperatives, the production of wheat is usually well organised and these cooperatives play an important role in marketing the wheat produced by their members. However, the marketing role of the cooperatives is often weakened because they lack the financial means to buy the wheat as it is harvested and the necessary infrastructure to adequately dry and store the produce. In addition, they often lack management and negotiation skills.

Collectors operate in rural areas and in markets in wheat-producing regions. These collectors make high margins and the prices they offer to wheat producers are based on the bargaining power of each producer and prices vary from producer to another.

Traders are also involved in wheat marketing. Wheat is often of less significance to them than other trade in beans and sorghum but there are some traders who maintain a trade in wheat. Traders also find that production quantities are very low.

The wholesalers involved in wheat marketing are few and buy from independent collectors and travelling traders. Some collectors and travelling traders act on behalf of wholesalers. Wholesalers sell to retailers or directly to consumers.

Wheat processors mainly buy wheat from cooperatives. They also buy wheat from traders. Purchases from cooperatives are generally made via a written or verbal contract and the price is fixed after the harvest. The final price agreed will take into consideration the cost of production and the prevailing market price. When processors purchase from dealers, the final price agreed is the prevailing market price. Artisanal wheat flour from household level grinding mills is mainly sold direct to consumers and to some dealers who resell the product. Due to the poor quality of the artisanal wheat flour, only a minimal amount is sold to bakers. The processed wheat market is almost entirely limited to buyers operating within the local environment of the wheat processing unit.

Marketing of imported wheat

Wheat is imported only in flour or grain form. The imported wheat grain is directly sold to processors. The flour processed locally and imported flour are sold to independent traders who in turn re-sell to bakers, supermarkets, restaurants and individual consumers mainly in Kigali City and other urban centres throughout the country. Processors also sell directly to supermarkets. The wholesale market for wheat flour is located in the main commercial area of Kigali City, in “Quartier Matheus”.

3.2.3. Soybean marketing

Local demand for soybean is not met by local production, therefore the gap is filled by imports from other countries, mainly neighbouring nations.

Marketing of domestic soybean production

There are three main actors in the marketing of domestic soybean production in Rwanda. These are individual farmers or farmers’ cooperatives, traders and agro-processors. Traders are composed of collectors, wholesalers and retailers. Some wholesalers are also the retailers to urban markets. The collectors also retail the soybean produce to local markets.

Individual farmers are the first link in the marketing chain. Soybean is either brought to local markets by farmers or collected at the farm gate by collectors, who bring it to the local markets. Wholesalers purchase soybean from collectors and farmers at these local markets and then take it to urban markets or to processing units in urban areas, where the market is larger. As most of these farmers are in urgent need of money, they often have no choice but to accept the low prices offered to them at harvest time.
Farmers’ cooperatives are also involved in the marketing of soybean. These cooperatives collect produce at harvest from their members and negotiate a price with big industrial companies. Their produce is mainly sold to Sosoma Industries Ltd and other processing units, which give a good price (prices range from Frw 450 to 500 per kg) but these companies are only interested in high quality grains. Cooperative members who sell their soybean through the cooperative get access to larger markets with a relatively good price. Preferences of buyers vary according to different market categories and intended end use of the soybean grains.

Local soybean agro-processors get soybean from wholesalers and cooperatives. These units process the soybean into various consumable products such as soya flour, composite flour made of soybean, maize and sorghum, fortified flour, tofu and soymilk. These products are sold in urban areas as well as to individual consumers living near the processing units. The sale passes through local traders who own shops and supermarkets. They may also have their own shops in urban areas, which sell the products at retail level as well as wholesale level.

Marketing of imported soybean

The majority of imported soybean is processed into soya flour, such as Sosoma No. 1, Sosoma No. 2, fortified Sosoma and other products. About 75% of soybean used by agro-processors is imported.

Processed soybean products are also imported from the EAC, mainly Kenya and Uganda. These imported products are of relatively good quality and are preferred by high end consumers. They are found in supermarkets such as Simba and Nakumatt in Kigali City.

3.3. REGIONAL AGRICULTURAL TRADE FLOWS FOR MAIZE, SOYBEAN AND WHEAT PRODUCTS

3.3.1. Intra EAC flows for maize, soybean and wheat products

Three countries, Kenya, Tanzania and Uganda dominate trade flows for grains of maize, soybeans and wheat, maize flour, wheat flour and soybean oil. In general, the EAC community has a negative trade balance for these products. It is importing large quantities of these products from outside the EAC, mainly from USA and Europe.
The EAC community is a net importer of wheat. The amount of wheat imported is triple the total EAC production of wheat. The following figure depicts the situation of total EAC production and imports of wheat.

**Figure 5**: EAC annual average of exports and imports of wheat, soybean oil, maize, wheat flour, maize flour and soybeans (tonnes)

*Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx*

**Figure 6**: EAC total imports and production of wheat

*Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx*
Kenyan trade in EAC

Kenyan trade statistics for 2005 - 2010 show that Kenya has a positive trade balance for wheat grain and soybean oil, whilst it has a negative trade balance for maize grain, soybean grain, wheat flour and maize flour. Kenya is importing large quantities of maize and soybean from Uganda. Kenyan imports of maize from Uganda amounted to 58,374 tonnes for a value of 12,550,000 US$ in 2010. The Kenyan imports of soybean from Uganda amounted to 14,870 tonnes for a value of 4,566,000 US$. Kenya also imports maize from Tanzania. Kenya is exporting large quantities of soybean oil to Rwanda, amounting to 676 tonnes for values of 959,000 US$ in 2010 and large quantities of wheat to Uganda.

Tanzanian trade in EAC

Tanzanian trade statistics for 2005 - 2010 show that Tanzania has a positive trade balance for all products except for soybean oil. It is exporting large quantities of wheat flour to Rwanda, Kenya and Burundi and large quantities of maize to Kenya. The total exports of wheat flour to Burundi, Kenya and Rwanda amounted to 7,517 tonnes, 2,101 tonnes and 3,237 respectively, for a total value of 6,608,000 US$ in 2010. It is also exporting moderate quantities of maize to Rwanda and Burundi. It is importing soybean oil from Kenya.

Ugandan trade in EAC

Ugandan trade statistics for 2005-2010 show that Uganda has a positive trade balance for all products except wheat. It is exporting large quantities of maize to all other EAC members. Ugandan exports of maize grain amounted to 17,763 tonnes, 71,559 tonnes, 2,555 tonnes and 11,298 tonnes respectively for Burundi, Kenya, Rwanda and Tanzania in 2010 for a total value of 22,960,000 US$. It is also exporting large quantities of maize flour amounting to 2,031 tonnes, 418 tonnes, 2,400 tonnes and 181 tonnes respectively for Burundi, Kenya, Rwanda and Tanzania for a total value of 1,056,000US$ in 2010. Uganda exports large quantities of soybean to Kenya and wheat flour to Rwanda and to Kenya. Uganda is regularly importing wheat from Kenya. The wheat imports of Uganda from Kenya amounted to 2,551 tonnes in 2010 for a total value of 1,131,000US$.

Rwanda and Burundi trade in EAC

Rwanda and Burundi have a negative trade balance for all soybean, maize and wheat products for the 2005-2010 period. Burundi exported only 198 tonnes of maize to Rwanda in 2006 and 29 tonnes of wheat in 2006. Burundi is almost exclusively importing from Uganda and Tanzania. Rwanda is exporting a limited amount of maize flour, wheat flour and maize, mainly to Burundi. The case of Rwanda is further analysed in the following section.

3.3.2. Rwanda in the context of EAC regional flows

As we have seen, Rwanda has a negative trade balance for maize, soybean, wheat, maize flour, wheat flour and soybean oil. Rwanda trades regularly with Uganda, Kenya and Tanzania, with a majority of imports coming from Uganda as can be seen in Figure 7 below. Imports from Uganda consist mainly of maize flour, wheat flour, maize and wheat. The majority of grain imports from Uganda are maize. Imports from Tanzania consist mainly of maize and wheat flour, with the majority being wheat flour.
Maize, maize flour and wheat are the three products which dominate in Rwandan imports from the EAC community.

Table 15 Estimated annual average of imports of maize grain and maize flour (tonnes)

<table>
<thead>
<tr>
<th>Products</th>
<th>Uganda</th>
<th>Kenya</th>
<th>Tanzania</th>
<th>Annual total average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>17,996</td>
<td>154</td>
<td>2,126</td>
<td>20,276</td>
</tr>
<tr>
<td>Flour of maize</td>
<td>1,861</td>
<td>98</td>
<td>62</td>
<td>2,021</td>
</tr>
</tbody>
</table>

The total annual average of maize imports from the three countries (Uganda, Kenya and Tanzania) trading on a regular basis with Rwanda is estimated at 20,276 tonnes (1,690 tonnes per month) for a value of 5,330,925 US$ (444,243 US$ per month). The total annual average of imports of maize flour from these countries is estimated at 2,021 tonnes (168 tonnes per month) for a value of 461,752 US$ (38,479 US$ per month).

Rwandan imports of maize from Uganda for 2009 and 2010 are estimated at 1,371 tonnes per month, compared to 6,000 tonnes of maize per month from Uganda in 2008 (East Africa Food & Trade Bulletin, March 2008 (No. 48)). This decrease can be explained by the implementation of the CIP which has resulted in an increase in maize production (IFDC, 2010), thus reducing imports from the EAC and other parts of the world. Note that the majority of maize imported into Rwanda used to come from within the EAC, but now more comes from countries outside the EAC.
Rwanda is exporting moderate quantities of maize to EAC members. The main destination of maize exported from Rwanda is Burundi, followed by Uganda.

Figure 8: Rwanda maize production and imports (tonnes)
Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx
Wheat grain imports to Rwanda come mainly from Kenya and Uganda, while the majority of wheat flour imported comes from Uganda and Tanzania. According to USAID (2009) Tanzania is supplying grade one flour, which is intended for bakery use, while Uganda is supplying grade two flour, which is intended for the manufacture of doughnuts.

The total annual average of imports of wheat grain and wheat flour (tonnes)

Table 16: Estimated annual average of imports of wheat grain and wheat flour (tonnes)

<table>
<thead>
<tr>
<th>Products</th>
<th>Uganda</th>
<th>Kenya</th>
<th>Tanzania</th>
<th>Total annual average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flour of wheat</td>
<td>9,121</td>
<td>56</td>
<td>8,633</td>
<td>17,810</td>
</tr>
<tr>
<td>Wheat grain</td>
<td>273</td>
<td>961</td>
<td></td>
<td>1,234</td>
</tr>
</tbody>
</table>

Source: Author’s calculations on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx

The total annual average of imports of wheat grain from Uganda and Kenya, the only EAC country members exporting wheat grain to Rwanda, is estimated at 1,234 tonnes (103 tonnes per month) for a value of 678,630 US$ (5,655 US$ per month). The total annual average of imports of wheat flour from Uganda, Kenya and Tanzania, the only EAC states members exporting the wheat flour to Rwanda, is at estimated at 17,810 tonnes (1,484 tonnes per month) for a value of 6,623,541 US$ (551,961 US$ per month).

In contrast to the decrease in maize imports, total imports of wheat have increased, even if there has been an increase in wheat production as a result of the CIP programme (IFDC, 2010). From 2008, the increase in wheat imports is greater than the increase in production as can be seen in Figure 10. But wheat imports from EAC to Rwanda have declined since 2009. The vast majority of imports of wheat now come from outside the EAC.
Rwanda is mainly exporting wheat to Kenya (annual average of 615 tonnes of wheat). Also, according to interviews with farmers in Nyamagabe District, Southern Province, UNICOOPAGI, Caritas Gikongoro and dealers of wheat in Gasarenda Centre, Nyamagabe District, there is an informal trade in wheat between Rwanda and Burundi, but it is difficult to estimate the volume of this trade. Rwanda also exports moderate quantities of wheat flour to all other EAC States.
As well as maize grain, maize flour, wheat grain and wheat flour, Rwanda is regularly importing soybean oil from Kenya and soybean from Uganda. Imports of soybean oil from Kenya are estimated at 195 tonnes per year (16.5 tonnes per month) at a value of 243,708 US$. Imports of soybean from Uganda are estimated at 89 tonnes per year (7.5 tonnes per month) for a value of 12,667 US$.

3.4. MARKETING AND TRADE BARRIERS FOR MAIZE, SOYBEAN AND WHEAT PROCESSED PRODUCTS

At the EAC level, the EAC programme for gradual elimination of internal tariffs, adopted in 2005, was completed in January 2010. There are no longer any internal tariffs on intra-EAC trade (WTO Secretariat, 2012). However, non-tariff barriers (NTBs) remain a major impediment to the grains trade, the trade of other products and business development in the EAC. NTBs affecting intra-EAC trade include technical regulations that are not harmonised within the EAC, sanitary and phytosanitary requirements, customs procedures and documentation, rules of origin and police road blocks (WTO Secretariat, 2012). There are national monitoring committees (NMCs) in all EAC member States to monitor progress on the elimination of NTBs. NMCs report quarterly to the EAC Sectoral Committee on Trade, Industry and Investment, which is responsible for resolving outstanding NTBs. Issues that are not resolved at this level are referred to the EAC council (WTO Secretariat, 2012). However, according to Kirk (2010) quoted by the WTO Secretariat (2012), there has been very little progress in tackling NTBs. Hence, there is need to move beyond simply identifying and discussing NTBs to implementation of regulatory reforms and reducing measures that restrict trade. A legally binding mechanism with sanctions for non-compliance would help to fully exploit economies of scale related to economic integration.

Figure 11: Rwandan exports of wheat flour 2005 - 2010 (tonnes)
Source: Author on the basis of FAO agricultural trade statistics from 2005 to 2010 found on http://faostat.fao.org/site/537/default.aspx
Section 3  
Market Analysis for Maize, Soybean and Wheat Products

At the national level, in addition to technical barriers to trade such as standards and measurements, plus sanitary and phytosanitary measures, the main marketing and trade constraints affecting the commercialisation of soybean, maize and wheat products can be traced from the production and processing phase to the market. In general, all factors affecting the production and processing of the soybean, wheat and maize products have repercussions for the marketing of these products. The main factors affecting the marketing of soybean, maize and wheat products (MINAGRI, 2011) can be summarised as follows:

- **Traditional farming systems and artisanal processing of soybean, maize and wheat leads to low production and a low quality** of soybean, maize and wheat products, and consequently a low price for final products;
- **Poor road and market infrastructure** increases the transaction costs for raw materials (maize, soybean, and wheat grains);
- The high rate of *informal commercialisation* of maize, soybean, and wheat grains leads to low prices which affect the formal trade of these products and, in turn, the production;
- The *fragmented market for raw materials* impacts on the functioning of large modern processors and the quality of output;
- Low quality soybean, maize and wheat grains lead to *low quality processed products*, which are unable to compete with imports;
- Very low volumes and poor quality of Rwandan production means that there is a *need for processors to import large volumes of produce* from other markets;
- **Grains from neighbouring countries are more competitively priced** and Rwandan grain producers find it difficult to compete;
- For producers, there is a *lack of consistently available, reliable data on prices in markets*. As a result, producers and cooperatives are not well informed at the time of sale and they receive low prices;
- **The processing and storage facilities** available to wheat cooperatives are *largely small and rudimentary*, leading to losses during milling;
- Insufficient access to finance and investment capital* for farming, agri-processing and export development; and
- **Banks are reluctant to offer financial services** to rural farmers due to low productivity and the high vulnerability of the sector. They impose high interest rates, heavy collateral requirements and inappropriate lending conditions, such as repayment schedules that are not linked to the agricultural cycle.

3.5. MARKETING OPPORTUNITIES AND POSSIBLE SOLUTIONS TO OVERCOMING TRADE BARRIERS

There are ample marketing opportunities for maize, soybean and wheat products, both grains and processed products. The EAC has a trade deficit for soybean, maize and wheat products. Furthermore, *intra EAC trade is much lower than trade between member States and other international markets*. As non-tariffs barriers are progressively eliminated, the EAC members’ products will gradually be better placed to compete with imports from outside the EAC, thus providing an opportunity to increase intra EAC trade. Should this trade increase, there will be a ready market for any increased production of maize, soybeans and wheat within EAC member states.

Rwanda has a *negative trade balance with respect to soybean, maize and wheat products*. As it is not producing the quantities in demand locally for maize, soybean and wheat (both grains and processed products), there is an opportunity for Rwandan grain producers and processors to increase their production in order to replace imports both from within and outside of the EAC.
Rwandan grain producers are not currently meeting demand from processors and, as a result, processors are required to import the majority of their grains from within and outside of the EAC. If Rwandan grain producers can increase their production they have an opportunity to fulfil this unmet local demand from processors. As Rwanda is a land locked country, importation costs make local processing competitive economically.

In order to increase the competitiveness of raw and processed grains from Rwanda, the factors identified above (under subtitle 3.3) which affect the production and marketing of grains and processed products should be tackled. The following issues also need to be addressed:

- **Increase the production of maize, soybean and wheat** by increasing the area dedicated to growing these crops and the use of improved good quality inputs and maximising yields;
- **Conduct research on grain seeds**, in order to find varieties suitable for Rwandan soil requirements as well as consumer requirements in terms of quality;
- **Increase the nutritional value of processed products** from maize, soybean and wheat currently found in the markets;
- **Formalise the small scale processing of grains**;
- **Construct and improve rural roads and markets**;
- **Improve processing and post-harvest facilities**, especially for wheat and soybean;
- **Establish a market information system** which provides grain producers with timely information on market prices in the country;
- **Increase producers’ awareness of the benefits of formal agricultural marketing**;
- **Offer guaranteed prices to farmers** and ensure the sustainability of the market through, for example, introducing purchase agreement contracts; and,
- **Establish an insurance system** which provides farmers with compensation for any losses incurred due to natural calamities.

In addition, the EAC should proactively **work to eliminate NTBs** by implementing regulatory reforms and reducing restrictive trade measures. This action should contribute to the competitiveness of maize, wheat and soybean grains and other products originating from member States.
Angelique Mukabyenda and her baby daughter Nadine. Angelique and her husband Venuste Ndayisabye joined the local farmers’ coop established by Trócaire partner DUHAMIC - ADRI. Angelique thinks their future is better and brighter because of the training and support they have received through the coop.
In accordance with Vision 2020, Rwanda is transforming its agricultural sector from the current traditional subsistence system into a “productive, high-value, market-oriented sector with forward linkages to other sectors”. Within this framework, the Government of Rwanda (GoR) has initiated policies, strategies and programmes to promote the agricultural sector aiming at improving food security, income levels, and productivity. Some of the policies and strategies adopted affect the production and trade of soybean, maize and wheat crops. Relevant national policies are detailed below.

**National Agricultural Policy (NAP)**

The National Agricultural Policy was launched in 2004 with the objective of *improving food security and the nutritional status of the population, and increasing the income levels of rural households*. To achieve these objectives, Rwanda adopted a strategy to transform agriculture into a modern, professionally operated and market-oriented system. The Government is promoting professionalism, specialisation, innovation, and public-private partnerships in the transformation process. The NAP identifies maize, wheat and soybean crops amongst the crops for which production should be intensified (MINAGRI, 2004).

**Economic Development and Poverty Reduction Strategy II (EDPRS2)**

The EDPRS2 aims to *boost the agriculture sector through the promotion of fertiliser and improved seeds*. In order to increase agricultural productivity, key interventions under the EDPRS framework include increasing soil fertility, reducing soil erosion and improving land use, land management and land administration. Farmers should receive intensive training on the optimal use of external inputs including improved seeds and inorganic fertilisers (MINECOFIN, 2007). The EDPRS2 includes the *crop regionalisation strategy which is the basis for agronomic research and government agricultural policy planning*. The crop regionalisation strategy divides the country into agro-climatic regions and identifies priority crops for increased production within each region. Thus, for Burera, Nyabihu, Musanze, Nyamagabe and Gicumbi Districts, wheat production is the priority. Musanze, Nyabihu and Nyamagabe Districts should also prioritise development of wheat agro-processing units. For Ruhango, Gatsibo, Rutsiro, Nyabihu and Ngororero Districts, maize should be the priority, with development of maize agro-processing units in Gatsibo and Nyabihu Districts (Republic of Rwanda, 2013).

**Rwanda Agriculture Board (RAB)**

RAB’s mission is to develop agriculture and animal husbandry through reforming crop and animal production and promoting research, agricultural extension, education and training of farmers in new technologies. The main goals of RAB are:

(i) to provide farmers and consumers of agricultural products with *information, techniques and services* so that they can supply the domestic market with higher quality produce and thereby raise incomes from agriculture and animal husbandry;
Section 4

Enabling Environment For Agricultural Trade

(ii) to work closely with other institutions in charge of standards and environmental issues to import fertilisers, crop protection products and other agricultural and animal husbandry inputs;
(iii) to contribute to establishing, publicizing and enforcing laws and regulations governing agriculture, animal husbandry, research as well as related products;
(iv) to promote and monitor activities to produce, market and regulate improved seed varieties; and,
(v) to support agricultural and animal husbandry cooperatives to deliver improved services.

In particular, RAB maintains good links, through the Institute des Science Agronomiques du Rwanda (ISAR), with the International Maize and Wheat Improvement Center (CIMMYT) from where new germplasm is sourced to enrich local agro biodiversity. RAB is also conducting research on the development of improved varieties for wheat and maize crops.

Rwanda Grain and Cereal Council (RGCC)

The Rwanda Grain and Cereals Council (RGCC) aims to address the challenges that restrict trading in grain and cereals by establishing structured grain and cereals trading systems to improve organisation of national trade practices and to promote approaches to trade that help farmers, suppliers, traders and processors to transform their business. Currently the RGCC is focussing on maize trade organisation.

Crop Intensification Programme (CIP)

The Crop Intensification Programme began in 2007 and seeks to improve farm productivity through the use of fertilisers, improved seeds and extension services. The CIP, through its land consolidation programme, encourages farmers with adjacent land to grow the same crop, so as to take advantage of the economies of scale to increase the net income from land holdings by increasing the volume of production while reducing costs. The land use consolidation programme is providing small scale farmers with the efficiency of access to fertiliser through voucher schemes, access to extension services; increased opportunity for credit access, increased marketing power, etc. (MINAGRI, 2012). The CIP provides subsidised fertilisers and improved seeds for crops such as maize, wheat, soybean, Irish potatoes and cassava cuttings. It also offers training to agronomists and facilitates the storage of produce at village level to prevent waste.

4.2. RELEVANT EAC POLICIES, INSTITUTIONS AND STRATEGIES FOR TRADE IN MAIZE, SOYBEAN AND WHEAT PRODUCTS

The East African Community (EAC)

The EAC progressively puts in place policies and measures facilitating trade between its member States. The EAC Common Market Protocol, signed in November 2009, became effective in July 2010. The protocol provides various rights and freedoms including the right to the free movement of goods, capital, services, and labour. Therefore, the maize, soybean and wheat trade benefits from the Common Market Protocol. In addition, the EAC standards committee and EAC member State standards bureaus are working to harmonise staple food product categories for maize and wheat grains and derived products, in order to improve the environment for cross border trade in these commodities.
**The Eastern African Grain Council (EAGC-RATIN)**

Eastern African Grain Council-Regional Agricultural Trade Intelligence (EAGC-RATIN) was founded in 2006 to coordinate matters concerning the grain industry on a regional level. It aims to improve the policy and trade environment in the grain sector. The EAGC-RATIN represents actors at all stages along the grain value chain, including grain farmers, traders, the milling industry, service providers and national associations (Pannhausen and Untied, 2010). The work of the EAGC-RATIN thus covers trade in maize and wheat. More specifically, the EAGC is concerned with:

(i) the promotion of a **well-functioning regional grain supply chain**, focusing on trade issues affecting all sectors of the chain, and building a platform for reducing constraints in regional grain trade;

(ii) **building cooperation, interaction, partnerships, alliances, networks and market linkages**;

(iii) **collecting market data, generating information exchange and sharing regional expertise**;

(iv) promoting investment in **structured marketing systems**, including warehouse receipts and commodity exchanges;

(v) acting as **main certification authority in structured systems**, and providing commercial services as needed;

(vi) recognising and supporting **accepted principles of international codes of corporate conduct**;

(vii) **facilitating awareness of new technologies**; and,

(vii) **representing the regional membership** at national, regional and international forums, and leading advocacy and lobbying actions, to promote the best interests of Council members (Pannhausen and Untied, 2010).
Section 4  
Enabling Environment For Agricultural Trade

**East African Farmers Federation (EAFF)**

The EAFF addresses three main issues which will benefit farmers involved in maize, soybean and wheat value chains:

(i) **Regional integration** – this includes educating farmers on the benefits of regional integration and easing substantially or completely removing nontariff barriers to trade, especially harmonising sanitary and phytosanitary regulations. The EAFF also supports the harmonisation of monetary policies and the promotion of peace to create the necessary framework for regional integration.

(ii) **Value addition** – this includes raising farmers’ awareness of the benefits of value addition and carrying out research in this field. The EAFF also aims to create manageable lending policies to improve small-scale farmers’ access to medium and long-term lending opportunities. The EAFF strives to protect the interests of small-scale farmers – for example, by addressing the problem of products from abroad being dumped in EAC countries.

(iii) **Infrastructure** – the EAFF lobbies for the improvement of infrastructure such as roads and the railway network, reduction of telecommunication costs and investment in irrigation and post-harvest facilities (Pannhausen and Untied, 2010).

**4.3. RECOMMENDATIONS FOR POLICIES, INSTITUTIONS AND STRATEGIES**

In order to improve the trade in grains (maize, soybeans and wheat) and grain-based processed products within EAC and Rwanda, the following measures should be taken at an institutional level:

- **Non-tariff barriers should be eliminated** by implementing regulatory reforms and reducing restrictive trade measures.

- **Spending on research and development should be increased**, with a focus on improving seed varieties in order to increase the quantity and quality of production. This should support farmers gain access to higher value markets.

- **Use of organic fertilisers should be promoted in combination with inorganic fertilisers**, in order to support the sustainability of land use and viability of agricultural value chain development over the longer term. Also, there should be precise recommendations on fertiliser application rates for crops in different Rwandan agricultural regions.

- **Financial institutions** should adjust the repayment of credit offered to farmers to reflect the seasonality of production and to enable them to make repayments after crop harvest.

- There should be **a clear link between processors and farmers** so that they are well informed about the quantity and quality of grains required and grain prices. This should reduce informal trading of grains and raise farmers’ income.

- Farmers **cooperatives** should, where possible, **hold shares in processing units** in order to increase their members’ income.

- Rwandan farmers’ cooperatives should increase their **collaboration with institutions dealing with grain production and trade at the EAC level**.
5. CONCLUSIONS AND RECOMMENDATIONS

This study provides information on trade patterns, trends and market dynamics and competitiveness for maize, soybean and wheat products at national and regional (EAC) levels. In particular, this study analyses the agricultural trade flows for maize, soybeans and wheat at national (Rwanda) and regional (EAC) levels, with a focus on opportunities and threats for a competitive market for raw and processed products originating from Rwanda. It identifies and analyses the enabling environment, including regulations, policies, strategies and institutions that govern production, processing and trade flows of maize, wheat and soybean grains and processed products. It also identifies opportunities for policy and strategic reforms as well as necessary measures to facilitate those reforms.

After reviewing information available on maize, soybean and wheat production chains and interviewing key stakeholders such as Trócaire partners, farmers, traders, researchers and agronomists, a statistical analysis of the data collected was conducted. The main findings of the study are as follows:

- **Most small scale farmers do not sell their produce in national or regional grain markets.** Instead, they sell the majority of their grains to rural traders who usually offer prices well below the prevailing market rate;

- **At a farmer level, the market is working against individual farmers who are vulnerable to price fluctuations and usually sell their grains at low prices.** As they have a stronger negotiation position with buyers, farmers who are members of cooperatives benefit from relatively better prices than individual farmers;

- **Domestic production of grains is low and not sufficient to meet market demand within Rwanda.** Grain produced often fails to meet quality requirements. As a result, processors are required to import grains in a raw form from inside and outside the EAC. Imports of maize and wheat grain are estimated to be roughly 20% of domestic consumption, with maize and soy grains coming mainly from Kenya, Tanzania and Uganda and wheat from non-EAC countries. Grain-based processed products (maize flour, wheat flour and soybean oil) are also imported from inside and outside the EAC.

- **Grain processors in Rwanda are working well below their capacity.** Only 30% of grain processed in Rwanda is of domestic origin. Overall, there is a negative trade balance for wheat, maize and soybean grains within the EAC, as well as for derived products such as maize and wheat flour and soybean oil. Therefore, there is an opportunity for Rwandan producers and processors to grow their share of the local market and to export to EAC markets;

- **There is a favourable environment for the trade of maize, wheat, soybean products at a national and EAC level.** The Government of Rwanda has taken a number of measures which promote the production, processing and trade of wheat, maize and soybean products, including drafting of national policies for agriculture, trade and investment; the formation of national institutions such as the Rwanda Agricultural Board (RAB) and Rwanda Grain and Cereal Council (RGCC); the development of specific strategies and programmes such as the Economic Development and Poverty Reduction Strategy II (EDPRS II) and Crop Intensification Programme (CIP). At the EAC level, since 2010, all internal tariffs have been removed and the remaining non-tariff barriers (such as non-harmonized technical regulations, sanitary and phytosanitary requirements, customs procedures and documentation, rules of origin, and police road blocks) are currently being reviewed. Also at EAC level, institutions have been established which promote regional trade of wheat, soybean and maize products such as the Eastern Africa Farmers Federation (EAFF) and the Eastern African Grain Council-Regional Agricultural Trade Intelligence (EAGC-RATIN).
Conclusion

One of the key findings of the research is that *grain markets are working against the interests of individual farmers and, to a lesser extent, farmers’ cooperatives*. Both these groups have poor negotiating positions, which mean that they are forced to accept prices well below the prevailing market rate. In order to address this issue, the study urges *Trócaire and stakeholders within the maize, soybean and grain markets*, such as small farmers, local and international NGOs, commercial organisations, donors, local and national government organisations and other development partners to work together to ensure the following measures are undertaken to improve the functioning of primary markets:

1. Establish a market information system, which grain producers can easily access to help them obtain timely information from major markets within the country;
2. Increase producers’ awareness of the benefits of formal agricultural marketing to ensure the sustainability of the market, for example, through introducing price guarantees and purchase agreement contracts;
3. Establish an insurance system, which provides farmers with compensation for any losses incurred in case of natural disasters affecting crop production;
4. Ensure the provision of increased funding for the construction and improvement of rural roads and markets;
5. Provide support to enable farmers and cooperatives to improve the processing and post-harvest facilities for wheat and soybean in particular;
6. Provide training for cooperatives in management and price negotiation, particularly those involved in wheat.

More broadly, in order to contribute to the development of maize, wheat and soybean markets, *Trócaire and stakeholders* should put an emphasis on *activities aimed at improving the production and processing of grains*. Such activities include:

- Promoting the use of *improved good quality inputs*.
- Conducting research on seeds, in order to find varieties that are high yielding and suitable for local soils. Use of the Musama seed variety should be reviewed in order to find a compromise between its suitability for Rwandan soil conditions and the quality of flour yielded. For maize, whilst a choice of varieties is needed, each plantation should plant a single variety in order to avoid mixing different colour grains before processing.
- Promoting production processes that increase the nutritional value of processed products.
- Developing models for the integration of small-scale production and processing stages which include options for *farmers’ cooperatives to buy shares in industrial processing*.

The survey has found that the *EAC trade environment is conducive to the expansion of maize, soybean and wheat products*. This is due to the removal of tariffs within the EAC area and the establishment of institutions which promote regional trade in maize, soybean and wheat products. However, there are still non-tariff trade barriers (NTBs) such as technical regulations and sanitary and phytosanitary requirements which are not harmonised within the region and still inhibit trade within the area. In order to further promote EAC trade, Trócaire and other stakeholders should put pressure on EAC members to:

- Move beyond simply identifying and discussing NTBs to implementing regulatory reforms and reducing measures that restrict trade. A legally binding mechanism with sanctions for noncompliance would help to fully exploit economies of scale related to economic integration.
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