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RWANDA CROSS-BORDER AGRICULTURAL TRADE ANALYSIS



FEBRUARY 2013

This publication was produced for the United States Agency for International Development by the USAID – Enabling Agricultural Trade (EAT) project, implemented by Fintrac Inc.

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ABOUT THE ENABLING AGRICULTURAL TRADE (EAT) PROJECT

The Enabling Agricultural Trade (EAT) project, funded by the United States Agency for International Development (USAID), and implemented by Fintrac Inc., supports the US government's global efforts to create conditions for agricultural growth. USAID established EAT based on substantial academic and field experience suggesting that a sound legal, regulatory, and institutional environment is a prerequisite to economic growth in the agricultural sector. EAT offers a suite of targeted and customizable analytical tools to support the startup and growth of businesses across the agricultural sector.

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The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

ACRONYMS

AMIS	Agricultural Marketing Information System
APHLIS	African Post-Harvest Loss Information System
CET	Common External Tariff
CIP	Crop Intensification Program
COMESA	Common Market for Eastern and Southern Africa
DRC	Democratic Republic of the Congo
EAC	East African Community
EDPRS	Economic Development and Poverty Reduction Strategy
EICV3	Third Integrated Household Living Conditions Survey
FAO	Food and Agriculture Organization
FEWSNET	Famine Early Warning Systems Network
GDP	Gross Domestic Product
GIEWS	Global Information and Early Warning System
GoR	Government of Rwanda
IFDC	International Fertilizer Development Center
ISAR	Institut de Sciences Agronomiques du Rwanda
MINAGRI	Rwanda Ministry of Agriculture and Animal Resources
MINICOFIN	Rwanda Ministry of Finance and Economic Planning
MINICOM	Rwanda Ministry of Trade and Industry
MT	Metric Tons
NBR	National Bank of Rwanda
NISR	National Institute of Statistics Rwanda
OBR	Burundi Revenue Authority
OPV	Open Pollinated Varieties
PHHS	Post-Harvest Handling and Storage
PSTA	Strategic Plan for the Transformation of Agriculture
RAB	Rwanda Agricultural Board
RATIN	Regional Agricultural Trade Intelligence Network
RRA	Rwanda Revenue Authority
RDB	Rwandan Development Board
RWF	Rwandan Francs
TLU	Tropical Livestock Units
UHT	Ultra High Temperature processing
USAID	United States Agency for International Development
USD	United States Dollars
VAT	Value Added Tax
WFP	World Food Programme

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EXECUTIVE SUMMARY

This study assesses trade between Rwanda and its four cross-border neighboring countries: Burundi, Democratic Republic of the Congo (DRC), Tanzania, and Uganda, and focuses on staple crops (maize, wheat, beans, Irish potatoes, cassava and rice), livestock (cattle, milk, eggs), and agricultural inputs (fertilizer, seed). The analysis examines cross-border trade, where appropriate, through four lenses: price, processing potential, seasonality, and trader demographics, to uncover unfilled demand in cross-border markets and outline trade opportunities for actors along agricultural value chains in Rwanda.

Over the past decade, Rwanda has experienced substantial economic growth and poverty reduction, driven by ambitious government programs on productive agriculture, human resource development, infrastructure development, and regional economic integration and cooperation.¹ Agriculture is the backbone of the Rwandan economy, contributing 32 percent to gross domestic product (GDP). Therefore the Government of Rwanda (GoR) considers agriculture a major catalyst for growth and poverty reduction.² To that end, the GoR has adopted a two-pronged approach to agricultural development, targeting substantial public sector investments along selected agricultural value chains and boosting productivity among smallholder farmers through the Crop Intensification Program (CIP). Since 2007, the CIP has achieved enormous gains:³

- » Maize and wheat production have increased six-fold.
- » Irish potato and cassava production have tripled.
- » Rice and bean production have increased by 30 percent.

These production increases have highlighted the need for Rwanda to develop cross-border and regional markets as a means of utilizing surpluses to sustain agricultural growth and further reduce poverty. The Government's Strategic Plan for the Transformation of Agriculture (PSTA) recognizes limited market development as a potential constraint to continued agricultural development. The PSTA emphasizes improved market access, increased prices of Rwandan exports and increased value added as essential components of future market development. The Economic Development and Poverty Reduction Strategy (EDPRS) defines some of the elements of this development, including increased private sector participation and the improved integration of stakeholders into the market.

Cross-border and regional trade also has considerable potential for Rwandan agriculture to develop a competitive advantage. The eastern portion of the Democratic Republic of the Congo (DRC) is currently Rwanda's largest regional export market, comprising more than two million consumers who are not well-supplied by their own domestic agricultural sector. There are other potential markets for Rwandan products—an additional two million people in the Akagera region of Tanzania (adjacent to Rwanda), and substantial populations in Burundi and Uganda. Increased integration with the East African Community (EAC) provides Rwanda with easy access to these markets, although regional integration brings challenges as well as opportunities. With increased integration, trade is likely to flow from the lowest-cost producer. Because Rwanda tends to have comparatively higher costs of production within the EAC, increased imports should also be expected. Nevertheless, it is well recognized that successful export trade depends as much on competitive advantage as it does on comparative advantage.⁴ The export trade out of Rwanda demonstrates this. In a number of instances, exports occur despite high basic production costs, because of specific trade linkages, market segmentation, or branding.

This analysis has assessed the extent and nature of existing trade and used that data to assess the potential for further exports, based not only on cost but also on the specific characteristics of the Rwandan products and potential markets.

¹ Ministry of Finance and Economic Planning (MINICOFIN), Rwanda Vision 2020 (July 2000).

² National Institute of Statistics of Rwanda (NISR), Third Integrated Household Living Conditions Survey (EICV3), 2011.

³ Ministry of Agriculture and Animal Resources (MINAGRI), Strategies for Sustainable Crop Intensification in Rwanda (2010).

⁴ Porter, M.E. *The Competitive Advantage of Nations*. New York: Free Press (1990).

KEY FINDINGS

Although Rwanda may not necessarily be the lowest-cost producer of agricultural commodities, it can nevertheless access cross-border markets based on aspects other than price, including appropriate processing, seasonality, quality, and branding, and above all, the capacity (not yet adequately developed) to respond to changing market requirements in neighboring countries.

A key aspect of cross-border trade development highlighted by this analysis is the need to improve market linkages between producers and buyers, and most importantly between traders within Rwanda and their end markets in other countries. Opportunities are being missed in the export of potatoes, beans, and dairy products as a result of limited market linkages that:

- » Restrict the accumulation of marketable volumes (especially of beans).
- » Result in inconsistent supply—thereby reducing market penetration.
- » Prevent identified export opportunities from being acted on by growers.

Cooperatives could play a major role in linking growers to markets but the clear message from trading/processing stakeholders was that further development of cooperatives is necessary, especially in commercial aspects of trade, before they could be considered to be filling this role effectively.

Another key opportunity highlighted by this analysis is in processing. A simplistic assessment of comparative advantage would suggest that there is no clear benefit to processing raw materials in Rwanda, especially given high levels of electricity costs, relatively high labor costs, and the additional “burden”⁵ of an effectively implemented system of taxation. In practice, however, Rwanda frequently demonstrates the opposite, especially for maize meal, cassava flour, and even wheat flour. In each case, the competitive export of these products depends on the specific characteristics of the products or of the markets in which they are sold, suggesting a sound export potential for these products that could be developed further.

This analysis has identified a number of specific export expansion or import substitution opportunities, including:

1. **Maize** – The potential to increase Rwanda’s maize exports is limited, but increased import substitution is possible. This will likely be more cost-effectively achieved through improved post-harvest handling and storage than through increased production.
2. **Maize meal** – There is a market for maize meal based on the production of a lower-quality product that is highly demanded in a cost-sensitive market.
3. **Beans** – Rwandan beans can be produced at a price that is competitive in neighboring markets, especially in Uganda. The main constraint to increased export trade lies in the cost of accumulating a marketable volume of beans of consistent quality. Increased exports will be possible if the transaction costs between the farm-gate and exporter can be reduced.
4. **Potatoes** – Rwandan potatoes can be produced at a price that is competitive in neighboring markets. The main constraint to increased export trade appears to lie in the development of efficient trade networks into Uganda and Tanzania and to take advantage in particular of the substantial haulage capacity that is returning empty through Kampala and Mwanza.

⁵ This represents an additional cost only by comparison with other countries where taxes are less efficiently collected.

5. **Cassava** – The potential to increase exports of cassava out of Rwanda is limited by the perishability of the product. Nevertheless, marginal increases in import substitution are possible. Given the dramatic increase in productivity that has been achieved to date, it now appears reasonable to look for further gains from improved post-harvest handling and processing, especially the drying of fresh cassava and the production of garri.⁶
6. **Rice** – Though Rwanda is unlikely to be able to develop a substantial export market for rice, there is scope to increase the degree of import substitution. However, since the productive area for rice is inherently limited and yields are already high, reduced imports would result mainly from reduced post-harvest losses in Rwanda itself.
7. **Milk** – Rwanda produces a surplus of milk which appears likely to grow as increases in demand lags behind increasing supply. Irrespective of cost, Rwandan UHT milk⁷ and cheese have established and receptive markets in the DRC, Burundi, and Uganda. There is an advantage to be gained from developing brand awareness of Rwandan dairy products. There is also a need to strengthen the supply chains in Rwanda and neighboring countries to ensure the consistency of supply.

A number of key observations were made, including:

1. **Seed** – There is an undeveloped market for quality maize, beans, and potato seed in neighboring countries, especially in Uganda and Tanzania.
2. **Fertilizer** – There is little evidence of fertilizer export to any country other than Burundi, where trade occurs at a village level and amounts cannot be quantified.
3. **Livestock** – Although exports of livestock represent a substantial proportion of all trade, the exports into the DRC are mainly in the form of live animals. This is because the value added during the slaughter process in the DRC is greater than in Rwanda. As a result, investment in abattoir and cold chain facilities may develop the domestic livestock market, but will do little to enhance cross-border trade.
4. **Wheat** – Despite considerable effort, Rwandan wheat producers have so far failed to produce quality wheat suitable for bread flour. Given the availability of suitable wheat on the world market, farmers would be better served by developing a trading and processing network that would allow them to sell their existing wheat production more effectively for processing into biscuit and chapatti flour, rather than focusing on local production of quality bread wheat.
5. **Women** play a significant role in cross-border trade. They are well represented in the formal sector. Though women dominate informal trade into the DRC, informal trade elsewhere depends on the activities of men and women working together.

⁶ Garri is a popular and staple West African food made by fermenting and roasting cassava tubers.

⁷ UHT milk means milk that has been undergone Ultra High Temperature processing.

CONCLUSION

Overall, this analysis indicates that the current state of cross-border trade depends less on the obvious comparative advantages associated with agricultural production and more on post-production factors, including processing and marketing. The EDPRS has already recognized the need to promote the development of business alliances and the integration of firms into value chains, which are both critical to efficient market development. From this perspective, Rwanda can expect to develop a number of export markets (as outlined in this report), but success in doing so will depend more on increased support for developing a vibrant trading network that can supply specific commodities into identified markets than on efforts to increase efficiency in agricultural production.

In some instances, Rwandan exports may benefit from developing niche markets based on quality and brand awareness. In other instances, however, Rwanda is able to benefit from being the lowest-cost exporter of lower quality products. This is especially true of:

- » Maize meal exported into the DRC and Burundi (and sold on the domestic market).
- » Fermented milk informally exported into Burundi.
- » Livestock informally exported to the DRC.

As the agricultural trade sector develops, care should to be taken to avoid the erosion of these comparative advantages. Imposing domestic and export grades and standards, for example—while necessary to ensure public health—should avoid excluding these export products from the markets they currently enjoy. Therefore, the development of an enabling environment will need to be sensitive to the specific needs of small businesses and the products they trade in.

METHODOLOGY

The U.S. Agency for International Development (USAID) has sponsored an analysis of existing and potential cross-border markets for the Rwandan agricultural sector. The assessment looked at trade between Rwanda and its four cross-border neighboring countries: Burundi, Democratic Republic of the Congo (DRC), Tanzania, and Uganda. The assessment focused on staple crops (maize, wheat, beans, Irish potatoes, cassava, and rice), livestock (cattle, milk, and eggs), and agricultural inputs (seed and fertilizer). The analysis examined cross-border trade, where appropriate, through four lenses: price, processing potential, seasonality, and trader demographics, to uncover unfilled demand in cross-border markets and outline trade opportunities for actors along agricultural value chains in Rwanda. This work will directly assist USAID/Rwanda in supporting Government of Rwanda (GoR) and private sector priorities of investment facilitation, export growth, and poverty reduction.

The first component was an analysis of the current price and trade data for the main CIP crops, inputs, and livestock by collecting data directly from official sources. Price data has been collected from national databases including eSoko, the Regional Agricultural Trade Intelligence Network (RATIN), and the Famine Early Warning Systems Network (FEWSNET), and cross-referenced with direct observation at key cross-border trade markets. Formal trade data has been collected from national and international agencies, including customs agencies and UN Comtrade. Informal trade data has been collected from the National Bank of Rwanda (NBR), which has monitored 53 formal and informal border crossings since 2009.⁸ The NBR data is subject to some degree of error due to difficulties in recording informal trade flows. Some increases in trade recorded in 2011 and 2012, for example, can be attributed to better data collection methods and an increase in coverage of border points. To ensure accuracy, this data has been cross-checked, where available, with formal and informal trade data in the DRC, Burundi, Tanzania, and Uganda.

The second component of this analysis involved canvassing key stakeholders in the Rwandan export chain, and stakeholders in Burundi, the DRC, Tanzania, and Uganda import chains, regarding their perspectives on agricultural trade in the region. Stakeholders interviewed included processors, millers, merchants, traders, retailers, transporters, freight forwarders, and relevant government and donor agencies. Interviews were conducted over a six-week period in major cross-border agricultural markets and along primary trade routes.

The final component involved an assessment of the market environment in each country, in terms of:

- » The regulatory aspects of the market.
- » The institutional capacity of private sector associations that organize both buyers and sellers.
- » The institutions that apply standards and regulations.
- » Transport capacity, efficiency and cost.
- » Communication and market information systems and the extent to which they are accessible to and used by the private sector.
- » Business performance in Rwanda and in neighboring countries, including the assessment of business confidence and of arbitration mechanisms.

The data collected during the three component exercises outlined above was used to assess undeveloped or under-developed export opportunities and import substitution opportunities for Rwandan producers and traders.

RWANDA ASSESSMENT TEAM

David Quinn - George Gray - Loren Puette

⁸ National Bank of Rwanda (BNR), Informal Trade Data, 2010-2012.

INTRODUCTION

Over the past decade, Rwanda has achieved substantial economic growth and poverty reduction. Ambitious government agricultural development programs such as the Crop Intensification Program (CIP), human resource development, infrastructure development, and regional economic integration and cooperation have driven this change.⁹ Over the past five years, as a result of these programs, and in particular the successes of the CIP, economic growth has averaged 7 percent per year, and national poverty levels have decreased by 12 percent. Extreme poverty has fallen from 40 percent to 24 percent in the past decade.¹⁰

However, despite the positive economic outlook, substantial challenges remain. Rwanda is landlocked, with limited land availability, natural barriers to trade, and limited resources. The Rwandan economy remains predominately agricultural, with 84 percent of the population involved in agriculture¹¹ and an industrial sector that remains underdeveloped. The economy also suffers from structural challenges with an internal budget deficit, low savings and investment rates, and an external balance of payment deficit.

As the backbone of the Rwandan economy, contributing 32 percent to gross domestic product (GDP), agriculture is seen by the government as a major catalyst for growth and poverty reduction.¹² However, agricultural production remains largely informal and mainly used for domestic consumption, although the share of marketed production has increased from 22 percent to 27 percent over the past five years.¹³ Targeting annual growth rates of 9 percent, the Rwanda Ministry of Agriculture and Animal Resources (MINAGRI) has adopted a two-pronged approach to agricultural development.

The first prong involves substantial public sector investments along selected agricultural value chains, including a \$3.9 million post-harvest handling and storage project. The second prong aims to boost productivity among smallholder farmers through the CIP. Launched in 2007, the CIP focuses on six priority crops, namely maize, wheat, rice, Irish potatoes, beans, and cassava. CIP activities include land use consolidation, improving seed and fertilizer use, improving extension services, developing agricultural marketing, promoting agro-input deals, and stimulating private sector input and output markets. Under the CIP, land holdings are consolidated and rearranged to form larger holdings and farmers' production activities are synchronized.

According to MINAGRI, the gains under the CIP have been enormous. The production of maize and wheat has increased six-fold, the production of Irish potato and cassava has increased three-fold, and rice and bean production has increased 30 percent.¹⁴ Coupled with the PSTA recognition that under developed markets is a constraint to agricultural growth, these production increases highlight the potential benefits of developing markets in Rwanda.

To this end, the PSTA emphasizes improved market access, increased prices of Rwandan exports, and increased value added as essential components of future market development. The development of cross-border and regional markets is one aspect of such market development and provides a means of utilizing surpluses to boost exports and reduce poverty. Within this context, the Economic Development and Poverty Reduction Strategy (EDPRS) also recognizes needs for greater private sector participation, support to small and medium sized enterprises, the integration of firms into value chains and a focus on the promotion of economic alliances.

⁹ Ministry of Finance and Economic Planning (MINICOFIN), Rwanda Vision 2020 (July 2000).

¹⁰ National Institute of Statistics of Rwanda (NISR), Third Integrated Household Living Conditions Survey (EICV3), 2011.

¹¹ Women make up 52 percent of this total (National Institute of Statistics Rwanda, 2008, GDP – National Agricultural Survey 2008).

¹² National Institute of Statistics of Rwanda (NISR), Third Integrated Household Living Conditions Survey (EICV3), 2011.

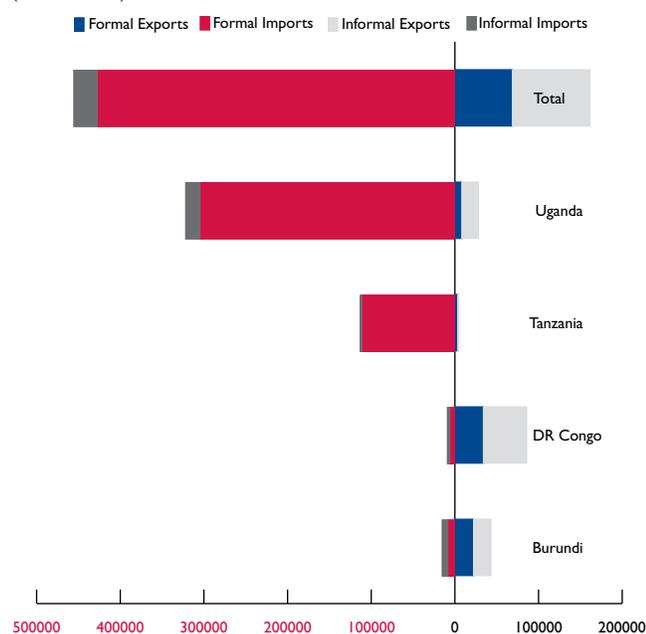
¹³ National Institute of Statistics of Rwanda (NISR), Third Integrated Household Living Conditions Survey (EICV3), 2011.

¹⁴ Ministry of Agriculture and Animal Resources (MINAGRI), Strategies for Sustainable Crop Intensification in Rwanda (2010).

RWANDAN TRADE PROFILE

Rwanda operates an open economy, with trade representing almost one-third of gross domestic product. Rwanda's main trading partners are the European Union (EU) and the East African Community (EAC). Rwanda has a substantial formal trade deficit; in 2011, merchandise exports were \$466 million while imports were \$1,776 million. This trade deficit is largely due to strong demand for both intermediate and consumer goods, in line with Rwanda's continued economic growth. Of this amount, agriculture comprises 36.7 percent of exports, and 14.2 percent of imports.¹⁵ Rwanda's traditional export sectors include coffee, tea, and minerals. Cross-border and regional trade has considerable potential for Rwandan agriculture. By concentrating on its competitive advantages, Rwanda can overcome the high transportation costs that typically challenge a landlocked country. According to official Rwandan trade statistics,¹⁶ total cross-border trade exports in 2011 were \$88 million, accounting for 23 percent of total exports. Of this amount, \$35 million was traded formally and \$53 million was traded informally. Cross-border imports over the same period were \$260 million, with \$258 million traded formally. Rwanda is thus running a substantial formal trade deficit, but an informal trade surplus. Informal cross-border exports are predominately agricultural produce (40 percent) and livestock (26 percent).¹⁷ The overall trade deficit results in a substantial volume of empty haulage capacity exiting Rwanda, equivalent to at least 3,500 MT per day.¹⁸ This capacity could be used to reduce export costs, but since most of the haulage capacity has either been contracted by, or is owned by parties outside Rwanda, Rwandan exporters cannot readily access this potential advantage.

FIGURE 1: TOTAL CROSS-BORDER TRADE IN CIP CROPS (2009-2012)



Note: Numbers in red indicate import totals, while numbers in black indicate export totals.

The DRC is Rwanda's largest regional export market, with both formal and informal exports accounting for the majority of Rwanda's cross-border exports. The markets at Goma and Bukavu represent vast markets for Rwandan agriculture, with a combined regional population of over 1.8 million. Increased trade linkages will have a direct impact on livelihoods and incomes of small-scale traders, the majority of which are female, while also helping regional food security. Integration with the East African Community (EAC)¹⁹ also provides Rwanda with a ready market for agricultural trade, although this presents challenges as well as opportunities. Rwanda, Burundi, and Uganda are all part of the EAC. Among the steps taken to lower barriers to cross-border trade, a common external tariff (CET) was introduced in 2009 that removed virtually all internal tariffs. Additionally, simplified trade regimes have been introduced through the EAC and the Common Market for Eastern and Southern Africa (COMESA) to support small-scale traders, including a minimum threshold of \$2,000 for customs duties, simplified rules of origin, trade information desks, and special processes and formalities. With increased trade integration, trade is likely to flow from the lowest-cost producer. Although integration will increase opportunities for

agricultural exports, increased agricultural imports should also be expected because Rwanda has comparatively higher production costs for many agricultural commodities.

¹⁵ World Trade Organization (WTO), Country Profile Rwanda (December 2012).

¹⁶ Ministry of Trade and Industry (MINICOM), National Cross-Border Trade Strategy (September 2012).

¹⁷ Ministry of Trade and Industry (MINICOM), National Cross-Border Trade Strategy (September 2012).

¹⁸ Calculation based upon interviews with Rwanda Customs officials.

¹⁹ EAC Membership: Burundi, Kenya, Rwanda, Tanzania, and Uganda.

CROSS-BORDER TRADE PROFILES

Burundi

Burundi has a population of 8.4 million, with 67 percent below the poverty line and a gross national income per capita of \$250, making it one of the poorest countries in the world.²⁰ The country has a low industrial base and relies on imports for manufacturing and food processing. Demand is limited, however; by the low levels of per capital income, and most production is consumed at the farm level.

Burundi's export base is narrow and undiversified, with coffee exports representing 70 percent of the country's foreign exchange.²¹ Burundi is Rwanda's second largest cross-border market, with \$12.7 million in total exports in 2011, and \$2.7 million in total imports.²² Rwanda is a net exporter to Burundi of maize, maize flour, wheat flour, cassava flour, potatoes, and milk. Burundi is a net exporter of cotton, palm oil, and sugar to Rwanda.

Democratic Republic of the Congo

In the DRC, political insecurity, combined with rapid population growth and poor infrastructure, have led to insufficient domestic food production. Agricultural exports have fallen from more than \$139 million in 1990 (12 percent of merchandise exports) to less than \$42 million by 2007 (2 percent of merchandise exports), with agricultural imports doubling during the same period.²³

The DRC has a high degree of urban concentration in border areas near Rwanda, and therefore represents the largest cross-border export market for Rwandan products. Having grown at an average rate of 50 percent since 2002, the DRC now consumes 70 percent of formal exports and 80 percent of informal exports from Rwanda.²⁴ Rwanda is currently exporting agricultural products including maize flour, wheat flour, beans, rice, meat, and dairy. The Rwanda Ministry of Trade and Industry (MINICOM) estimate the market potential of the region at \$1.1 billion in North Kivu and \$1.2 billion in South Kivu, with \$387 million within Goma and Bukavu alone.²⁵ Goma, in North Kivu, has an approximate population of 800,000 people and Bukavu, in South Kivu, 1 million.

Tanzania

Tanzania is a generally food secure country, with modest exports of agricultural commodities to neighboring countries. In January 2011, however, Tanzania banned food exports in an effort to dampen rising prices of staples; the ban resulted in lower export volumes as traders faced higher transaction costs to evade the ban. The ban was lifted in November 2011, and over the past 12 months, Tanzania informally exported to Rwanda 110,997 metric tons (MT) of staple food commodities, including 42,819 MT of maize, and 15,403 MT of beans.²⁶ However, because of the relatively long distance between urban centers on each side of the border, informal trade with Rwanda is virtually non-existent. Formally, Tanzania is a net exporter to Rwanda of maize, beans and rice, and a net importer (although in negligible amounts) of Irish potatoes and cassava.

Uganda

Uganda is the main source of staple food commodities in eastern Africa, contributing 70 percent of the regions' total exports. These exports consist primarily of significant grain sales to Kenya, Rwanda, the DRC, and South Sudan.²⁷ In 2011, Uganda's formal export earnings increased 33.4 percent to US\$2,159 million, while informal exports declined 32.6 percent to US\$360 million.²⁸ The biggest market for informal exports was the DRC, which accounted for 35.4 percent of total, followed by South Sudan (23.5 percent), Kenya (19.5 percent), Rwanda (9.9 percent), Tanzania (8.1 percent), and Burundi (3.5 percent).

²⁰ World Bank, Country Profile Burundi (December 2012).

²¹ World Bank, Deepening Regional Integration to Address Burundi's Trade Challenges and Support Economic Growth (May 2011).

²² Ministry of Trade and Industry (MINICOM), National Cross-Border Trade Strategy (September 2012).

²³ USAID, Agribusiness Commercial, Legal and Institutional Reform Diagnostic (AgCLIR): Democratic Republic of the Congo (2011).

²⁴ Ministry of Trade and Industry (MINICOM), National Cross-border Trade Strategy (September 2012).

²⁵ Ministry of Trade and Industry (MINICOM), National Cross-Border Trade Strategy (September 2012).

²⁶ FEWSNET et al., East African Cross-Border Trade Bulletin, Issue 3 (October 2011).

²⁷ FEWSNET et al., East African Cross-Border Trade Bulletin, Issue 3 (October 2011).

²⁸ Bank of Uganda, Annual Informal Cross-Border Trade Survey Report (2011).

Kenya was the largest supplier to Uganda (50.1 percent), followed by the DRC (39.8 percent), with Tanzania, Rwanda, and South Sudan combined at less than 10 percent. Export trade to South Sudan has grown markedly in recent years, increasing from \$60 million in 2005 to \$635 million in 2008. In 2007, South Sudan became Uganda's largest trading partner. Since 2008, however, exports to South Sudan have stagnated as a result of tighter import controls and the uncertain political and security situation.²⁹

Porous borders between Uganda and Rwanda mean that trade often flows within the region in response to short-term seasonal price fluctuations. Overall, however, Uganda is a net exporter of maize, maize flour, potatoes, rice, cassava and milk to Rwanda, while Rwanda is a net exporter of beans to Uganda.

BORDER CROSSING POINTS

Rwanda trades with neighboring countries across a number of border points, including airports.³⁰ These crossing points vary considerably in the extent of their development, administration, geography, and the volume of trade passing through them. These factors can impact the trade that occurs across and around them.

Burundi

Gasenyi/Nemba

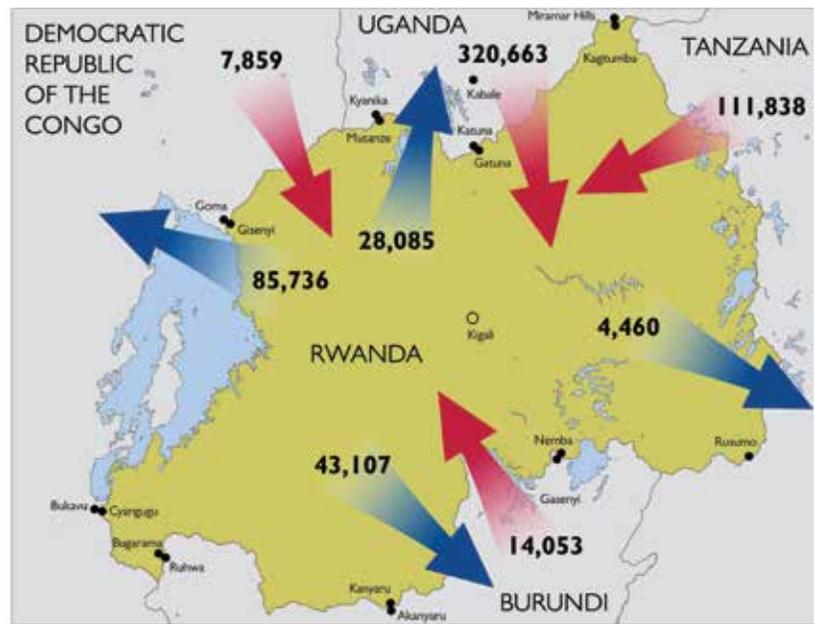
The most significant border crossing is Gasenyi/Nemba, which became a one-stop border post in February 2012—Rwanda and Burundi now share a single customs and immigration facility. This facility has undoubtedly improved formal trade by streamlining processes and reducing costs, however, barriers to informal trade remain. Cassava, maize, and potatoes are all sourced from Rwanda by informal traders in

Burundi, some of whom travel as far as 30km on each side of the border by bicycle to purchase and sell products. This can be a lucrative trade, but it is based on seasonal price differences between the local markets in Burundi and Rwanda and is therefore intermittent. The number of informal traders entering Rwanda to source goods can be as high as 300 per day. These traders reported that they face constraints from Rwandan authorities who will refuse entry if the number of traders appears excessive, or if local authorities have determined that too much of a given commodity is leaving the country. Under these circumstances, traders may risk apprehension and confiscation by trying to cross back into Burundi via the adjacent forest of Geko.

Akanyaru/Kanyaru

The second most significant crossing point between Rwanda and Burundi—for both formal and informal trade—is the border post at Akanyaru/Kanyaru. According to data collectors for the Burundi customs office (OBR), approximately 20 trucks of 20 MT capacity and 100–120 informal traders regularly cross the border each day, trading in both directions. Informal traders use bicycles to move 30 km into Rwanda as far as Butare/Huya, and return with goods to Kayanza, 30 km within Burundi, or vice versa. Unlike the Gasenyi/Nemba border, which runs through a substantial forest, the communities on either side of the border at Akanyaru are immediately adjacent to each other. This results in small volumes of agricultural commodities moving back and forth with a very high frequency.

FIGURE 2: TRADE FLOWS OF CIP AGRICULTURAL COMMODITIES, 2009–2012 (MT)



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

²⁹ World Bank, "Enhancing the Recent Growth of Cross-Border Trade between South Sudan and Uganda," *Africa Trade Policy Notes #21* (June 2011).

³⁰ Some cheese is exported by air to Brazzaville. Overall, however, airports—while important to horticulture—are of negligible significance for trading most agricultural products.

Ruhwa/Bugrama

The third border crossing into Burundi is at Ruhwa/Bugrama on the Ruhwa River. This has also been developed as a one-stop border post, although not yet operating as such. This border crossing has the potential to link Bujumbura through Rwanda to the Northern Corridor into Uganda. Road construction is underway in both Rwanda and Burundi to facilitate the movement of traffic along this route, but construction is not yet complete and parts of the route in Burundi are almost impassible for trucks. As a result very little formal trade occurs across this border post. Also, because this border post is isolated, informal cross-border trade is restricted to localized movement of goods between adjacent communities. When the assessment team visited this post, it was almost deserted, and it is unlikely the one-stop border facilities will be utilized effectively for some time to come.

Tanzania

The single manned border crossing from Rwanda into Tanzania is at the Rusumo Falls. This border post is part of the east African central trade corridor and, as such, is designated to become a one-stop post in the near future.³¹ There is considerable agricultural activity adjacent to the border on the Rwandan side. However, with the exception of the small town of Ngara, which lies 26 km from Rusumo along a steep and unmaintained road, there is no market within Tanzania reachable by bicycle from Rusumo. As a result, the amount of informal trade at Rusumo is very limited. On average about 40 informal traders cross each day, although some days fewer than 20 cross. By contrast, the number of 20 MT trucks crossing the border each day generally exceeds 200—but more than half of the trucks leaving Rwanda are empty.

Uganda

Gatuna/Katuna

There are three manned crossing points between Rwanda and Uganda. The most significant is Gatuna/Katuna, where approximately 120 trucks enter, and 100 leave, Rwanda each day, although 75 percent of the trucks leaving Rwanda are empty.

Gatuna has been designated as a one-stop border post, but the system is not fully operational. While customs officers from Rwanda and Uganda share a common scanning facility, immigration formalities and vehicle clearance must be undertaken independently on each side of the border before goods or people are allowed to pass. Additional improvements, especially upgrading offices and parking facilities, will be required if this border post is to effectively facilitate cross-border trade.

Economic activity occurs close to the border on both sides. Approximately 550 informal traders cross the border each day: 200 exit Rwanda with goods and 350 enter carrying goods from Uganda. The reach of this informal trade is significant; Rwanda Revenue Authority (RRA) assessors indicated that informal traders often use bicycles to carry goods a short distance (5 km) into Uganda where they can accumulate a 5–10 MT load that could then be taken by small truck to Kampala.

Kagitumba/Miramar Hills

Gatuna is often congested, leading to plans for developing the border post at Kagitumba/Miramar Hills. Currently this border post is extremely quiet. Although there is economic activity on both sides of the border, the roads leading to the border post in Uganda are poor. Customs officials reported no more than 10 large trucks per month, almost all carrying export goods from Rwanda. Smaller (5 MT) trucks are more common, but still rarely exceed 5 per day. Fewer than 10 people cross the border each day.

Plans to construct a one-stop border post are due to be implemented in 2013, but will require substantially upgrading the roads to Ntungamo and Kigali if the investment is to be justified.

Kyanika/Musanze

A third major Rwanda-Uganda border post is Kyanika/Musanze, close to the DRC. This crossing lies 8 km from Kyanika and 20 km from Musanze. *Guhaha*³² is very common and results in a large number of people from Rwanda moving across the border each day.

³¹ The Rusumo border post already operates as a one-stop post for fuel trucks, but is at present a conventional crossing point for all other purposes.

³² *Guhaha* is the practice of a person from one country working in another to obtain food to bring back to his or her family.

Formal trade is highly variable depending on the security situation and access to the DRC. Informal trade is discouraged by customs on both sides of the border, but large volumes of commodities do cross into and out of Rwanda around the Kyanika border post. Satellite photographs show at least three small tracks that run across the border within 2km of the border post. Observations near the border showed a steady flow of small traders using bicycles to carry potatoes. While this flow was not visible at the border, it resumed again approximately a few minutes from the border. In Uganda, about 8 km from the border the bicycles were offloaded at an intermediate market where women weighed, graded, and sold the potatoes. Some potatoes were then loaded into Fuso trucks, while others continued by bicycle to Musanze.

Democratic Republic of Congo

There are two main crossing points between Rwanda and the DRC, at Gisenyi/Goma and at Cyangugu (Rusizi)/Bukavu. Informal trade also occurs by boat across Lake Kivu. This latter route is especially important for trading livestock, which are frequently sold at small markets along the Rwandan lakeshore to traders from the DRC, who ferry the livestock back across the lake.

Gisenyi/Goma

There are two crossing points between Gisenyi and Goma. A one-stop border post is under construction at the Corniche crossing and a second crossing point exists at Poids Lourds. In both cases, markets on either side of the border are close to the crossing point so that informal trade by bicycle or by heading goods is quite common. More than half of the informal trade occurs across the Corniche crossing, while Poids Lourds is used more for formal trade. In both cases, Rwandans comprise more than 60 percent of all informal traders.³³

Due to the poor state of the physical infrastructure in the DRC, Goma is relatively isolated from the rest of the country although it is able to draw on the productive agricultural area of North Kivu, which is immediately adjacent to it. Nevertheless, Goma's relative isolation makes it dependent on cross-border trade and thus an attractive market to Rwanda (and other countries of the EAC).

Cyangugu/Bukavu

The more southerly border crossing into Bukavu also consists of two Rwandan border posts, Rusizi I and Rusizi II, lying some 4km apart. Both border posts are immediately adjacent to Bukavu in the DRC, but in Rwanda, Rusizi I is close to the center of Cyangugu, while Rusizi II is more isolated. As a result, most of the informal trade takes place across the bridge at Rusizi I, while most heavy vehicles cross downstream at Rusizi II.

The town of Bukavu is better linked to the DRC hinterland than Goma and is able to draw on agricultural production from the southwest. Nevertheless, like Goma, Bukavu depends on cross-border trade, and prices are frequently higher in Bukavu than they are in Goma.

Both border crossings from Rwanda into the DRC are comparable in terms of their proximity to markets and, as a result, the nature of the trade at both points is also similar. This trade has been well documented.³⁴ Although some formal trade does occur, the crossings are still typified by a steady stream of informal traders carrying goods on their heads or on bicycles into the DRC. In many cases, goods are immediately accumulated on the DRC side of the border into small truckloads for transport to retail outlets. The apparent reason for this practice: it is cheaper and less risky to negotiate the multiplicity of minor and informal regulations than to follow formal procedures for clearing an entire shipment.³⁵ As a consequence, even formal traders often arrange for their goods to be sold off in small lots to informal traders on the Rwandan side of the border, where the goods cross the border and are passed on either to retail outlets directly or to larger traders who accumulate consignments for distribution elsewhere.

³³ International Alert, "La Traverse: Petit commerce et amelioration des relations transfrontieres entre Goma (RTD Congo) et Gisenyi (Rwanda)," June 2012.

³⁴ International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012.

³⁵ International Alert, "La Traverse: Petit commerce et amelioration des relations transfrontieres entre Goma (RTD Congo) et Gisenyi (Rwanda)," June 2012.

These transport arrangements constitute opportunities for employment, but also an additional cost of trade. This cost has been estimated to be equivalent to an additional transport distance of 1549km,³⁶ but varied considerably according to the particular border crossing and the commodity exported into the DRC (Table 1).

As reflected in the table, the price difference in the DRC for wheat flour entering from Rwanda at both crossings amounted to 12 percent of the retail value in Rwanda, and 6 percent for milk at the Gisenyi–Goma crossing. For Irish potatoes, the DRC price at both crossings was 100 percent higher than in adjacent Rwanda markets.

These price differences seem attributable to various factors, including:

1. Differences in the distribution chains. Where there is some formal trade as part of larger, inter-regional distribution chain, price differences are likely lower than for products that are predominantly transported informally and in small units.
 - » Products traded formally and informally: Maize flour, wheat flour, rice, and milk.
 - » Products mostly traded informally: Irish potatoes, beans.
2. Supply conditions in the DRC. Products that are produced in sufficient volume to be exported from the DRC will have lower price differences. Key exported products from the DRC include cassava—primarily around the Goma area, but not Bukavu.
3. Turnover and portfolio choice by the informal trader. For goods primarily handled by informal traders, the price differences may reflect the number of trade transactions per day in each product. For example, a USD\$10.00 investment in trade will yield an equal return from one trade transaction that earns a 100 percent return and four trade transactions that earn between 20 percent and 25 percent per trade. This may help explain the wide difference in cross-border prices between beans and potatoes.

Women play a pivotal role in transporting commodities into the DRC, comprising 74 percent of informal cross-border traders. Women are predominant in this informal trade even though they face heightened harassment, tend to trade in goods with the lowest profit, and have the lowest levels of access to capital.³⁷ These gender dynamics are discussed in greater detail on page 80 of this report.

The informal nature of the DRC border provides larger Rwandan traders with an advantage in accessing the DRC markets over competitors from Uganda or Tanzania. It is possible that fully formalizing the DRC border crossings would remove both a source of livelihood for Rwandan women in the area and erode the advantage enjoyed by Rwandan exporters over traders from other countries. Nevertheless, the current system constrains the export of Rwandan goods into the DRC market by driving up commodity costs and thus dampening consumer demand. In the long term, regularizing the border will benefit trade and should allow for increased Rwandan exports wherever their products are competitive in the market.

TABLE 1: RECORDED PRICE DIFFERENCES: CROSSING THE RWANDA–DRC BORDER (AS A PERCENTAGE OF RETAIL VALUE)

COMMODITY	PRICE INCREASE FROM GISENYI TO GOMA PROGRAM	PRICE INCREASE FROM KAMEMBER TO BUKAVU
Maize	11%	4%
Maize Flour	18%	11%
Wheat	N/A	N/A
Wheat Flour	12%	12%
Irish Potatoes	100%	100%
Cassava	6%	50%
Cassava Flour	N/A	33%
Rice	4%	4%
Beans	15%	50%
Milk	6%	20%
Chicken	7%	27%
Eggs	33%	33%
Average	21%	31%

Source: Field research, November 2012.

³⁶ World Bank, Poverty Reduction and Economic Management: Facilitating Cross-Border Trade between the DRC and Neighbors in the Great Lakes Region of Africa (June 2011).

³⁷ International Alert, “La Traverse: Petit commerce et amélioration des relations transfrontières entre Goma (RTD Congo) et Gisenyi (Rwanda),” June 2012.

COMMODITY ANALYSIS

MAIZE

Overview

Ten years ago, maize was not a significant crop in Rwanda, but MINAGRI statistics show that production has increased substantially during the last five years (Figure 3). This growth has been driven by an increased emphasis placed by MINAGRI on maize as a CIP crop that can underpin national food security.³⁸ To encourage production, new varieties have been introduced, a subsidized inputs program has been implemented,³⁹ and cultivation patterns have been shifted from mixed cropping to consolidated monoculture. While Rwanda remains a net importer of maize, this assessment suggests that there is some potential to develop the export market for maize meal and to achieve further import substitution for maize itself.

Production

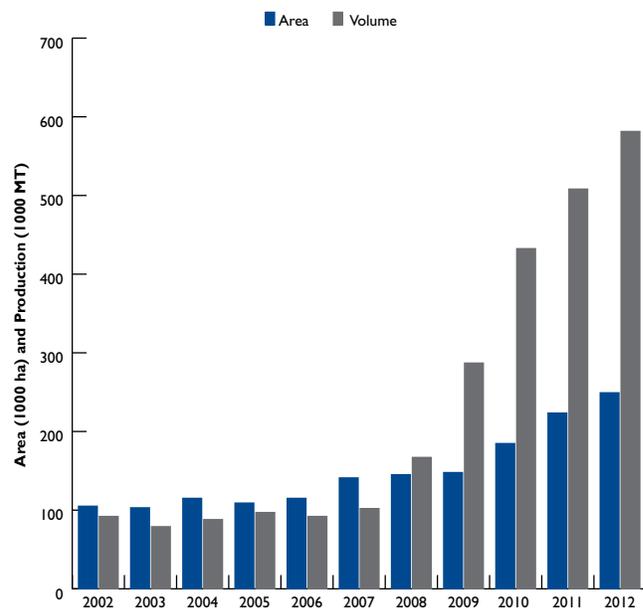
Under the CIP, maize is grown throughout the country (despite its limited suitability to conditions in the Northern Province). National production is almost evenly distributed among the four rural provinces, with the Eastern Province producing the largest share (32 percent). The bulk of maize is produced in Season A (September to February). Approximately 70–75 percent of the crop is harvested in December/January, while 20–25 percent is produced in Season B (March to July) in May/June. Some additional production (5–10 percent) can occur in Season C, harvested from the wetlands in November/December,⁴⁰ but volumes are variable. According to MINAGRI statistics, maize production has increased dramatically—from 175,000 MT in 2008, to an estimated 575,000 MT in 2012.

Consumption

Maize is consumed both green and as maize meal. Two recent estimates of maize meal consumption are available: a 2011 market survey estimated total demand for maize meal to be approximately 90,000 MT.⁴¹ By contrast, the Third Integrated Household Living Conditions Survey (EICV3), 2011⁴² estimated the value of domestic consumption of maize meal in 2010/11 to be RWF30.7 billion—which based on an average retail price of RWF400/kg, would imply a consumption volume of 76,750 MT.

The EICV3 also estimated fresh (un-milled) maize consumption in 2010/11 to be worth RWF21.1 billion. At an average price of RWF200/kg, this would imply national fresh maize consumption of 106,000 MT. Factoring in additional volumes required for seed, livestock feed, and storage losses, domestic maize utilization can be estimated at 202,000 MT (Table 2).

FIGURE 3: TRENDS IN AREA AND VOLUME OF MAIZE PRODUCTION



³⁸ The National Post-Harvest Staple Crop Strategy a Rwanda Strategic Grain Reserve consisting of 187,000 MT of maize and 67,500 MT of beans.

³⁹ Under the subsidized inputs program farmers have effectively received fertilizer at 50 percent of cost, and free seed.

⁴⁰ Statistics for Season C are limited and forecast data based on expected yields is available only for 2009.

⁴¹ Undertaken privately and quoted on the Post-Harvest Handling and Storage (PHHS) website (www.rwandaphhs.com). This survey included the consumption of urban and rural consumers, schools, prisons, and Food Aid agencies.

⁴² National Institute of Statistics of Rwanda (NISR), The Third Integrated Household Living Conditions Survey (EICV3), 2011. Rural and Urban consumption data from this survey is summarized in Annex.

The figure of 202,000 MT utilized is somewhat less than the MINAGRI assessment of production for 2011 (both harvests) of 508,000 MT. The facts that (1) market prices have not collapsed in 2012, (2) customs data indicates that commercial imports have continued at levels in excess of 65,000 MT, and (3) domestic maize mills are currently experiencing difficulty in sourcing maize and are operating significantly below capacity, suggest discrepancies between the data and methodologies of EICV3 and MINAGRI that have yet to be resolved.

Marketing

Maize is harvested during periods of relatively high humidity which can hamper drying, reducing the storage life and the commercial viability of the grain. Domestic drying facilities and storage capacities are both limited and a significant proportion of the maize crop is eaten as green maize during the harvest period, thus reducing potential storage losses.⁴³ Of the remainder, a proportion is stored for domestic use throughout the season, being toll-milled locally through small hammer mills to produce meal for home consumption. The balance, variously estimated at 14 percent to 50 percent of production, is marketed either as fresh maize or dry maize grain.^{44, 45}

Much of the commercial surplus is marketed through the cooperative network, whereby cooperatives sell to traders who in turn sell to maize mills. Rwanda contains a number of hammer mills, and one large commercial mill producing high-quality roller meal.⁴⁶ The hammer mills generally convert whole grain to flour.⁴⁷ In both cases, meal is bagged and sold in both urban and rural markets.

Cross-Border Trade

The trade data for maize shows that over the last four years Rwanda has been a net importer of maize grain and a net exporter of maize meal (Figures 4 and 5). The bulk of the maize imported into Rwanda has entered as grain, with only 6.1 percent imported as maize meal. By contrast, Rwanda has mainly exported maize meal, which has constituted 70 percent of all maize exports.

The main source of maize is Uganda, which has supplied 88 percent of all imports. Relatively little maize enters Rwanda from any other source except Tanzania, which has supplied 9 percent of imports mainly as grain. Maize meal has been imported almost exclusively from Uganda. The main destination for exported maize from Rwanda has been the DRC, which received 69 percent of all exports, supplied mainly as maize meal.⁴⁸

⁴³ Estimated by the Africa Post Harvest Loss Information System (APHLIS) to be as high as 17.5 percent for stored maize grain.

⁴⁴ Based upon EICV3 and MINAGRI AMIS statistics for 2011.

⁴⁵ CIAT-ADT/et al, "Rwanda: Maize Sub-Sector Market Survey," November 2002.

⁴⁶ Two small roller mills (one of Chinese manufacture and the other European) were once operational but are now reportedly out of business.

⁴⁷ Although in some cases the grain is de-hulled first in which case the end product is of much higher quality.

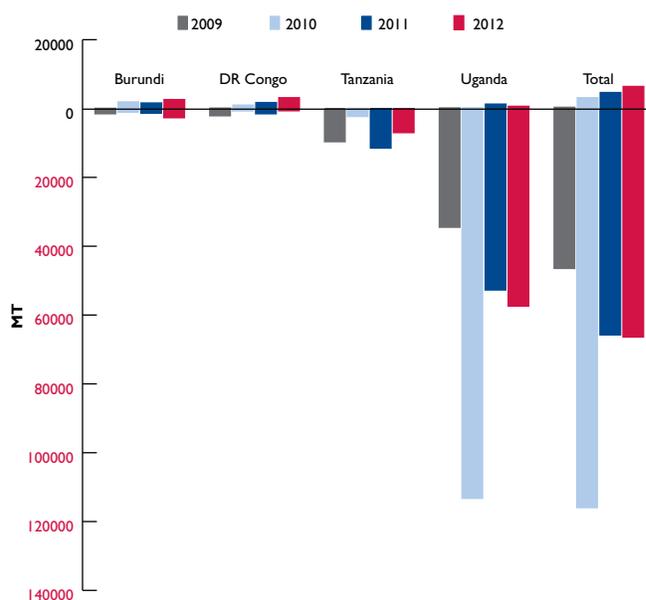
⁴⁸ MINIMAX exports residual maize to Kenya in the form of animal feed.

TABLE 2: ESTIMATED UTILIZATION OF MAIZE

		VALUE (RWF MILLIONS)	VOLUME (MT)
Maize meal consumption	Urban	6990	17475
Maize meal consumption	Rural	23700	5925
Fresh maize consumption	Rural	21100	105500
Seed (2%)			3969.15
MINAGRI Estimated Livestock feed			40000
Storage Losses (17.5%)			29557.5
Total Utilization			202426.7

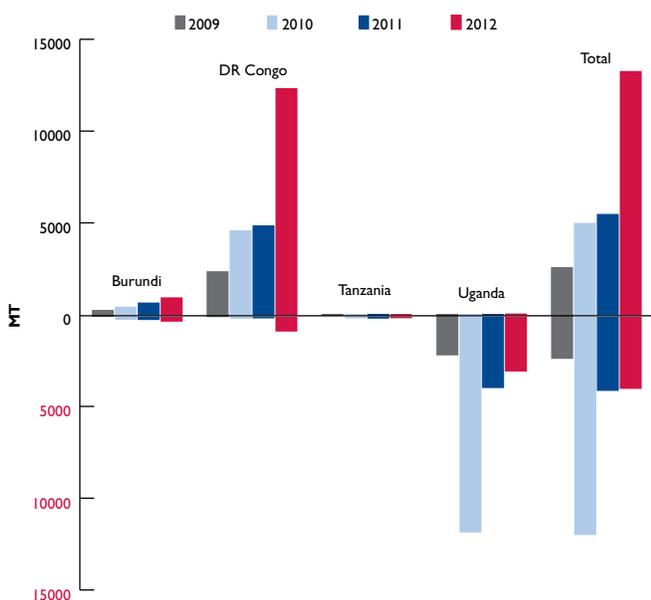
Sources: EICV3; MINAGRI; PHHS Program.

FIGURE 4: TOTAL CROSS-BORDER TRADE IN MAIZE, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

FIGURE 5: TOTAL CROSS-BORDER TRADE IN MAIZE MEAL, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

The nature of the cross-border trade in maize has varied according to the direction of trade and the trading partner. Almost all maize and maize meal entering Rwanda has been formally imported, with less than 0.5 percent entering through informal channels. Conversely 54 percent of all exports have been through informal channels. In terms of trading partners, the DRC has shown the highest level of informality, with 61 percent of all trade occurring informally.

Both maize and maize meal is occasionally exported from Rwanda through both formal and informal channels into Burundi and Uganda; volumes exported to Tanzania are negligible. This cross-border trade reflects the lack of barriers to trade at these crossing points, so that the trade is subject more to the local pressures of domestic trade than to substantive national differences. In the areas immediately adjacent to these border posts, maize is traded almost as if it were within a single market. Spatially, maize and maize meal are transported from localized areas of surplus to areas of deficit where prices are higher, irrespective of the country of origin or sale, while temporally, traders on either side of the

borders might accumulate small volumes of stocks through both domestic and cross-border trade when prices are low, for resale in either market when prices are higher. This localized trade is subject to the added dimension of exchange rate fluctuations which can favor the movement of maize in one direction or the other. Cross-border trade of this nature is common in Burundi and Uganda where areas adjacent to Rwanda are highly populated and share similar agro-ecological zones.

Overall, cross-border trade in maize can be characterized by:

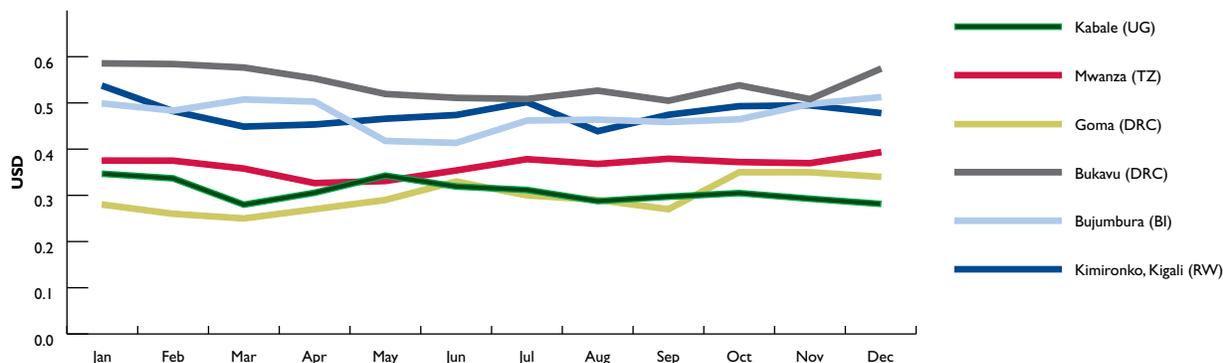
- » Substantial and consistent importation of maize as grain and meal from Uganda and, to a lesser extent, Tanzania.
- » Growing volume of exports of maize meal, largely to the DRC, although unprocessed maize exports have also increased.
- » Sporadic export of small volumes of maize and maize meal to Burundi and Uganda, but almost never to Tanzania.

These characteristics are further developed below, by considering the key determinants of trade: price, processing, seasonality, and trader demographics.

Price

Imports of maize from Uganda and Tanzania are driven by lower wholesale prices, reflecting lower production costs. Although transport costs are substantial from the market in Mwanza (Tanzania) to Kigali (\$65/MT), these costs are generally less than the product price differential so that imports from Tanzania remain feasible for most of the year. For Kabale (Uganda), however, prices are not only lower than those of Mwanza, but transport costs are lower still. Imports of maize from Kabale therefore remain viable through the year.

FIGURE 6: AVERAGE RETAIL PRICES OF MAIZE, 2010–2012



Sources: FAO, InfoTrade Uganda; Rwanda eSoko; WFP.

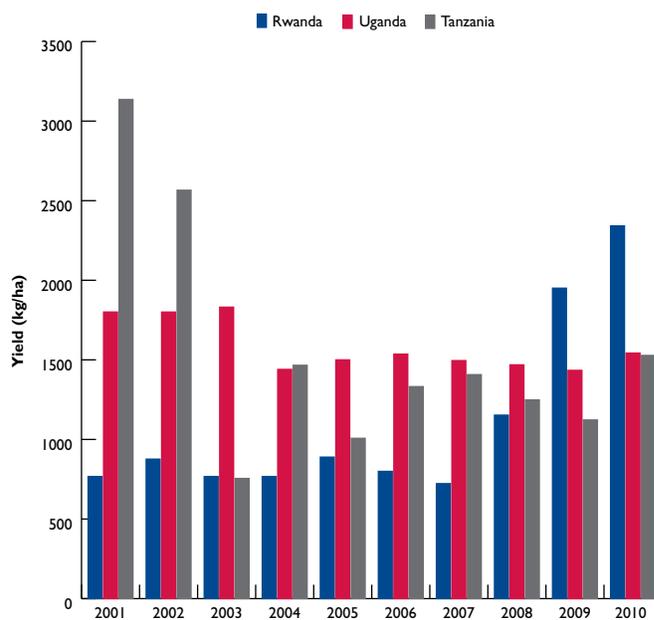
By contrast, maize prices in Bujumbura (Burundi) and Bukavu (DRC) are similar to those of Kigali (Figure 6). Some trade of maize produced in areas adjacent to the borders with Burundi and the DRC will therefore be possible on an opportunistic basis, but volumes can be expected to be small. The price of maize in Goma (DRC) is substantially lower than the price in Kigali, possibly due to the presence of food aid in the market. Direct imports from Uganda will also limit the volumes of maize that can be exported from Rwanda into Goma.

The current levels of maize grain imports are likely to continue until such time as Rwandan maize can be produced at a comparable cost to maize in Uganda or Tanzania. A number of factors militate against this, including:

- » The humid climate in Rwanda, which increases drying costs.
- » Steep slopes.
- » Acid soils.
- » Limited marketing infrastructure.

Nevertheless, neither Uganda nor Tanzania has intensified production to a commercial optimum,⁴⁹ and MINAGRI data suggests that Rwanda can produce maize at higher yields than either Uganda or Tanzania (Figure 7). Indeed, according to available statistics, maize production in Rwanda is much closer to the economic optimum than that of either Uganda or Tanzania. National yields in Rwanda exceed those of Uganda or Tanzania, where fertilizer applications remain at moderate levels.⁵⁰ Therefore, maize prices in Rwanda should be lower than prices in either of these neighboring countries. That this is not the case suggests either that maize prices in Rwanda are inflated by factors other than the cost of production (especially transaction costs involved in accumulating volumes of maize, but also the fixed costs associated with small holdings) or that the production data may be incomplete.

FIGURE 7: NATIONAL REPORTED MAIZE YIELDS IN RWANDA, TANZANIA AND UGANDA.



Source: FAOStat.

⁴⁹ Commonly deemed to be derived from applications of approximately 40kg/ha N.

⁵⁰ Rwanda is currently at 25kg/ha, which compares to 7–10kg/ha for Uganda and Tanzania. IFDC, 2012.

Processing

Although maize meal is competitively produced in both Uganda and Tanzania, the levels of maize meal imports into Rwanda from these two countries are much lower than the imports of maize. Even though it might be considered more cost effective to mill maize in Uganda or Tanzania, where the costs of energy and labor are lower than in Rwanda, only 6 percent of maize enters Rwanda as maize meal. The reason for this lies in the different nature of the milling sectors in these countries. The majority of formally traded maize meal in Uganda and Tanzania is produced by roller milling, which produces two grades of maize meal (generally designated No.1 and No.1.5 or 2). The finest grade has an extraction percentage of just 60 percent, while the second grade is higher at 70 percent. By contrast, less than 20 percent of the maize meal produced in Rwanda is of this quality. Instead it is mainly produced by hammer mills, which can extract 90 percent or more of the grain as flour, albeit of lower quality. The cost of producing meal through a hammer mill is at least 22 percent cheaper than that of producing second grade roller meal so that commercially imported maize meal from Uganda and Tanzania is significantly less competitive in a Rwandan market that is dominated by hammer mill production.

It is possible that economic development and increasing per capita GDP may in the future result in the increased consumption of roller meal and the erosion of the advantage enjoyed by local production, but at present the domestic market is price sensitive and dominated by local production. This has clear indications for developing domestic and export grades and standards which, while necessary to ensure public health, should also avoid excluding lower quality maize meal from the market that it currently serves.

The increasing export of maize meal to the DRC reflects both the growth of their markets and the gradual decline in the value of the Rwandan Franc against the Congolese Franc and the US Dollar. The nature of the crossing between Rwanda and the DRC does not favor the formal transit of goods,⁵¹ which are vulnerable to *tracasserie*.⁵² Instead maize meal enters Rwanda where it is sold to small traders on the DRC border who informally transport it across the border thus reducing the costs of the crossing. The market contains a substantial proportion of price-sensitive, low-income consumers who prefer the lower quality maize meal produced in Rwanda, and it is in this market segment that Rwanda has a clear advantage.

Seasonality

Seasonality has a limited impact on the trade of maize into Rwanda. Uganda, as the major producer in the region, has the capacity to store maize, which limits potential price fluctuations and keeps the imported price of maize relatively constant (Figure 8). Conversely, limited storage capacity of maize within Rwanda means that the availability of domestically produced maize in the market can increase substantially in the months following harvest so that imports can be expected to decrease. This effect has been most pronounced in February to May, following Season A (Figure 8).

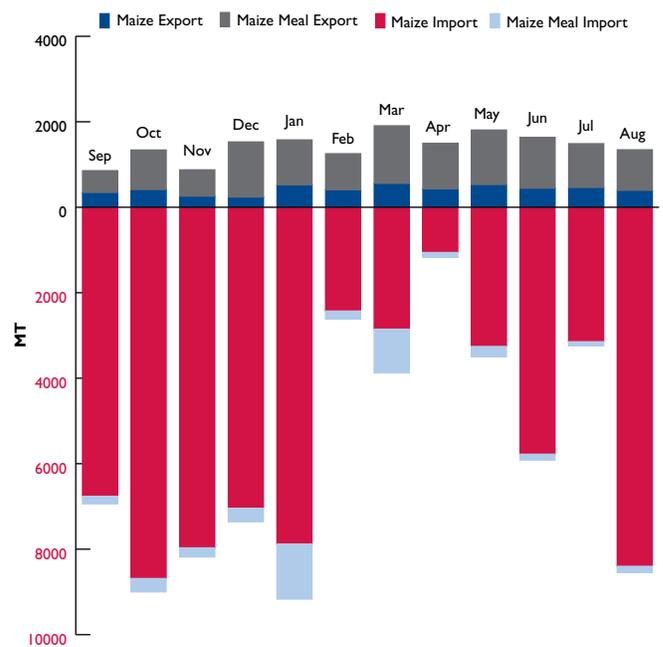
It is probable that increased storage capacity would reduce the extent of price fluctuations, leading to a reduction in both peak imports and sporadic exports of grain, i.e. improved imports substitution. The National Post-Harvest Strategy,⁵³ which aims to improve the efficiency of utilizing national production, includes the development of improved storage including warehouse receipts/warrantage, which if adopted would have a beneficial

⁵¹ A proportion of the higher quality maize meal imported from Uganda is re-exported to DRC.

⁵² The terms “*tracasserie/tracasseries*” are widely used in the DRC to describe all of the delays, obstructions, and other annoyances—corrupt or otherwise—associated with official processes.

⁵³ Ministry of Agriculture and Animal Resources (MINAGRI), National Post-Harvest Staple Crop Strategy (October 2011).

FIGURE 8: MONTHLY TRADE FLOWS OF MAIZE AND MAIZE MEAL, 2011-2012.



Source: National Bank of Rwanda, Rwanda Revenue Authority, UN Comtrade

impact on maize trade flows. Recent programs, both in Rwanda and elsewhere,⁵⁴ have indicated that it is more appropriate to introduce such interventions amongst professional cooperatives and traders rather than smallholder farmers. Nevertheless, it is unlikely that storage alone will remove the price incentive to import from cheaper sources (such as Uganda) at other times of the year, unless the cost of local production can be reduced.

Trader Demographics

The demographics of cross-border trade in maize and maize meal are complex. The stakeholders range from small informal traders, carrying no more than 100 kg of maize or maize meal per day across the border, to commercial importers purchasing as much as 20,000 MT of grain. Comprehensive surveys⁵⁵ have shown that across the DRC border, the maize trade is dominated by small traders handling up to 100 kg of grain or meal per day.

Conclusions

Analysis of the trade and price data for maize and maize meal suggests the following:

1. Substantial differences exist between current datasets for consumption and production of maize, which limit the value of conclusions that can be drawn. Policy development will be constrained for as long as the datasets remain inconsistent.
2. Notwithstanding the above, at current levels of production and with the current infrastructure, Rwanda will remain a net importer of maize from Uganda.
3. Nevertheless, Rwanda appears to enjoy an advantage in the domestic market for maize meal, based not so much on efficiencies in production, but on the production of a lower-quality product that can be more cheaply produced and is widely accepted by the cost-sensitive market.
4. This market for cheaper maize meal extends into the DRC, but is limited elsewhere. Exports into the DRC have also been facilitated by the decline in value of the Rwandan Franc.
5. Apart from the above, occasional imports and exports of maize and maize meal occur across most of Rwanda's borders. Although such trade can be affected by exchange rate fluctuations, it appears to be localized in nature and better described as domestic trade within a given area across a transparent border than as international trade. This "quasi-domestic" trade only occurs where agro-ecological conditions are similar across the border.

Recommendations

1. The potential to increase exports of maize out of Rwanda is limited, but increased import substitution is nevertheless possible. This will most probably be achieved more cost effectively through improved post-harvest handling and storage than through increased production.
2. Import substitution through increased productivity is technically feasible and should already be occurring. The fact that it is not suggests that the price of maize is being affected by factors other than those associated with productivity (such as marketing costs) or that further and detailed analysis of maize production, including input utilization, is required.
3. Rwanda's comparative advantage in the domestic market for maize meal could be eroded through the introduction of grades and standards that favor the higher-quality roller meal produced in neighboring countries. It will be important to ensure that if new standards are introduced they should continue to allow for the production of cheap hammer-milled maize meal—for which a clear preference exists both locally and in the export markets in Burundi and the DRC.

⁵⁴ Including three USAID programs: the Post-Harvest Handling and Storage project in Rwanda, the Market Linkages Initiative in East Africa and the Agricultural Trade Expansion Program in Ethiopia.

⁵⁵ International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012. International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012.

BEANS

Overview

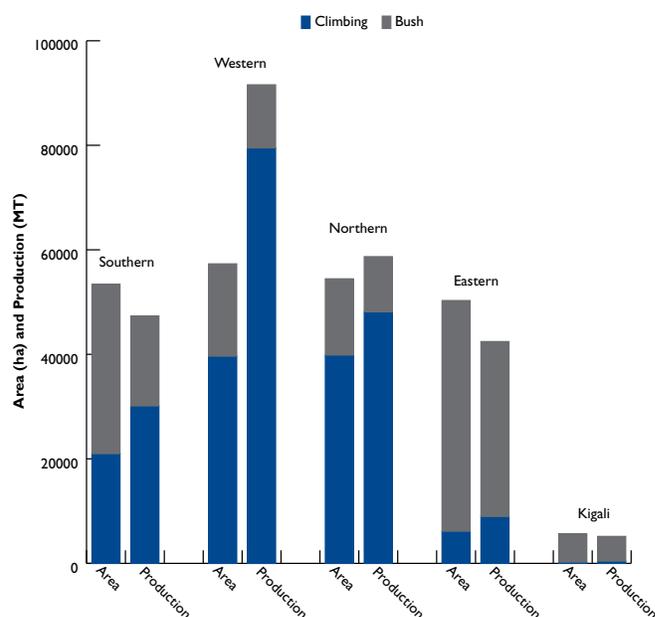
Beans are a key staple of the Rwandan diet, and the bean crop is the largest of all the agricultural commodities produced in the country. While official price and trade data classifies all beans in a single category, three genera of beans are grown in the country.⁵⁶ Classifying the many different types of beans under one heading is akin to classifying wheat and rice together as “cereals”. As a result, it may hide the different potential markets that might exist for different types of bean.

Beans have traditionally been grown as a staple crop to ensure household food security. Strategies of staggered and mixed sowings of beans, and the use of local landraces, are common mechanisms to reduce the risk of interrupted rainfall or disease. However, these practices also reduce the commercial utilization of the crop, and may explain why it has been difficult to develop commercial markets and common nomenclatures for the different strains and mixtures of beans. Nevertheless, the assessment of cross-border markets (particularly those in Uganda) suggest the exports of beans could be substantially increased if issues of marketing could be successfully addressed.

Production

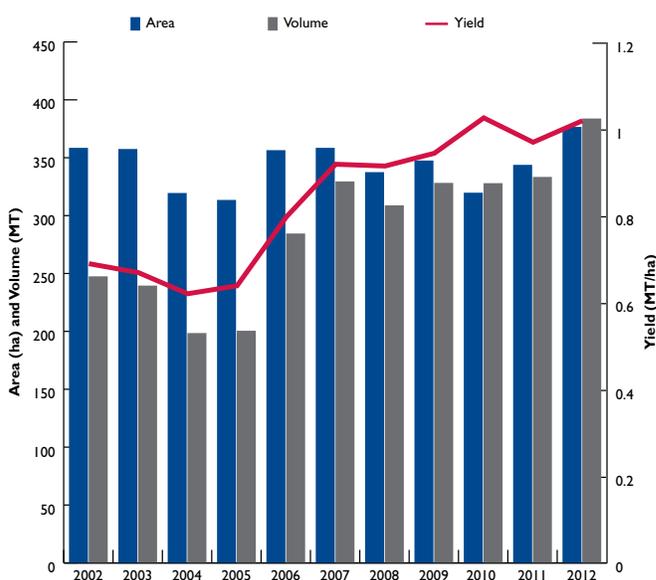
Beans are grown throughout the country, but production is concentrated in Western Province (41 percent of production), where climbing beans predominate. The crop is grown in two seasons. Over the last four years, 57 percent of production has been derived from Season A (September to February) and 43 percent in Season B (March to July).⁵⁷ Because of climatic differences between areas and the indeterminate nature of bean growth, the harvest period can be extended over as much as three months in each case. Such a “rolling harvest” allows beans to be available either from on-farm production or in the market for much of the year; thus reducing storage concerns considerably.

FIGURE 9: DISTRIBUTION OF BEAN PRODUCTION (2012 A AND B COMBINED)



Source: MINAGRI Crop Assessment 2012A.

FIGURE 10: TRENDS IN AREA, VOLUME, AND YIELD OF BEANS, 2002–2012



Sources: FAOStat 2002–2007; MINAGRI AMIS Crop Assessment Reports 2008–2012.

⁵⁶ The most common are **Phaseolus** beans, which are all of one species but include many different varieties and forms such as white pea beans, red kidney beans, and speckled beans of both bush and climbing types. **Vigna** beans, which include Mung and Adzuki beans, are also widely grown. Finally, **Vicia** beans are large brown beans (sometimes called fava beans or broad beans) with a black hilum. These are less favored in Rwanda.

⁵⁷ MINAGRI, Crop Assessment Final Reports: 2009B, 2010A, 2011B, and 2012A.

Production data shows that the area of beans sown has remained relatively stable over the last decade, but average yields have increased by 40 percent. This has been largely driven by increased production of higher yielding climbing beans⁵⁸ and a substantial increase in domestic demand.⁵⁹

Overall, production has averaged between 300,000 MT and 350,000 MT over the last three years, and for 2012, is estimated to exceed 350,000 MT.

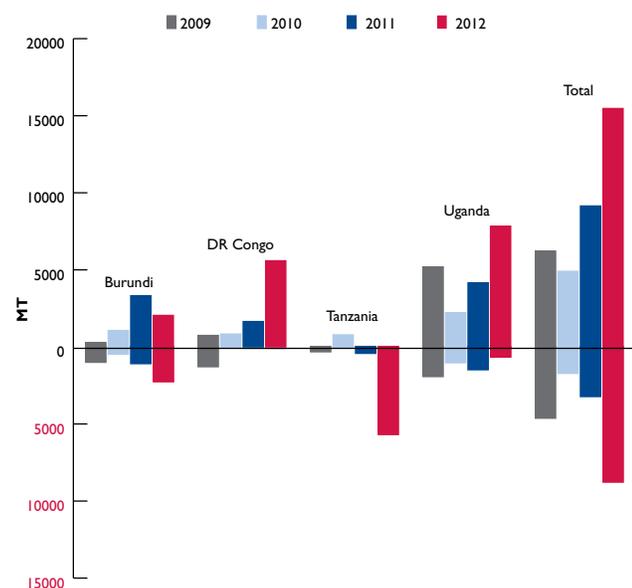
Consumption

Beans are consumed fresh, as well as dry. EICV3⁶⁰ data indicates that fresh consumption is most common in rural areas, where approximately 20 percent of the beans consumed are eaten fresh, almost all from on-farm production. Little fresh consumption takes place in urban areas. The same data also shows that urban dry bean consumption for 2010/11 was approximately 31,330 MT,⁶¹ equivalent to annual per capita consumption of 14.7 kg.⁶² Rural dry bean consumption was higher at 244,700 MT, with fresh bean consumption at 56,250 MT. These amounts correspond to annual per capita consumptions of 27.0 kg and 6.2 kg respectively. Overall, the EICV3 data suggests that total annual consumption in 2010/11 was approximately 332,280 MT. Additional utilization of beans would include seed (estimated at 20,000 MT) and post-harvest losses estimated at 30,000 MT,⁶³ bringing total domestic utilization in 2011 to approximately 380,000 MT.

Marketing

EICV3 data indicates that 38 percent of consumption, equivalent to 126,000 MT, was sourced from the market in 2011. Nevertheless, the market for beans appears to be poorly developed. A network of assemblers, traders, and retail outlets does exist, but there are few large commercial buyers. Instead, interviews with stakeholders indicated that beans are traded in a multiplicity of small parcels, each with its own quality and price. This lack of standardization is typical of a commodity traditionally and primarily produced for subsistence, not as a cash crop, and has major implications for cross-border trade.

FIGURE 11: TOTAL CROSS-BORDER TRADE IN BEANS, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

Cross-Border Trade

The trade data for beans shows that over the last four years Rwanda has been a net exporter of this commodity (Figure 11). Nevertheless, considering the significance of beans as the primary national staple, and the emphasis placed on its increased production, the volumes traded are surprisingly low.

Exports in 2011 amounted to 5.9 percent of annual production, while imports were less than 1.6 percent. Small volumes of beans are imported from all neighboring countries: Tanzania has supplied the most (36 percent) and DRC the least (9 percent). Conversely, the majority of exports have been to Uganda (54 percent), while Tanzania has received the least (2 percent). Although trade has increased over the last three years, the consistently small volumes suggest either that Rwanda has been able to maintain relative production/consumption equilibrium, or that transaction costs between the markets of neighboring countries are high enough to constrain trade.

⁵⁸ MINAGRI production data for 2012A indicates an average yield per ha for climbing beans of 1563 kg, as opposed to 683kg for bush beans.

⁵⁹ EICV3 data shows a 40 percent increase in consumption between 2005 and 2010/11.

⁶⁰ National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011.

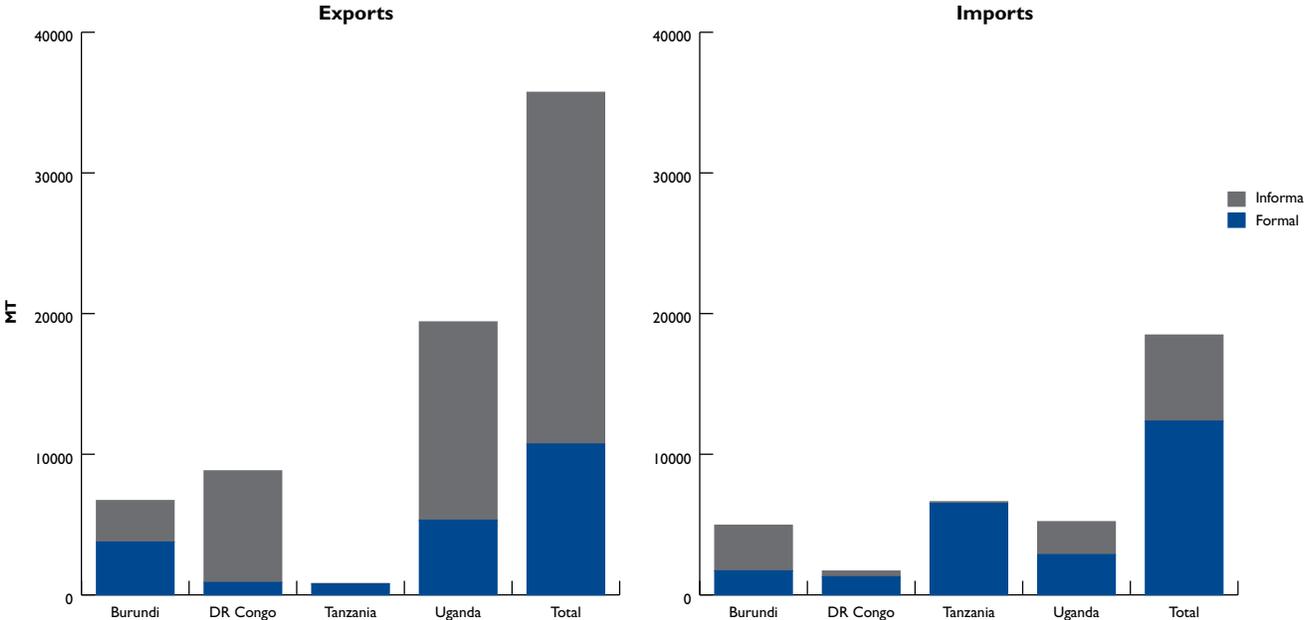
⁶¹ Figure assumes an average price of RWF450/kg and an expenditure on dry beans of RWF14.1 billion.

⁶² Figure assumes an urban population of 2.13 million.

⁶³ Production estimated at 10 percent, due to insufficient evidence in the literature.

As shown in Figure 12, the majority of imports from 2009–2012 have been through formal channels (70 percent), while the reverse has been true for exports which have been predominantly informal (67 percent). This is at least in part due to the nature of the border posts to the main supply and destination countries. The crossing into Tanzania at Rusumo, for example, is relatively isolated and does not lend itself to small-scale trade by heading or bicycle, so trade at that post is almost exclusively formal.

FIGURE 12: FORMAL AND INFORMAL TRADE IN BEANS FROM 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

At other border posts, informal importation may be possible, but under EAC duty-free arrangements, it has no major advantage over formal trade beyond avoiding customs clearance charges and a (refundable) withholding tax. Conversely, exports into the DRC are almost exclusively informal since that is the least costly form of entry. What is perhaps surprising is the substantial proportion (73 percent) of informal exports entering Uganda. Under EAC rules there should be little advantage to informality, and yet over the last three years, while formal exports have dwindled, informal trade to Uganda has increased by 250 percent. This reflects increased domestic bean production, as well as the current small-scale nature of the bean trade.

Overall, cross-border trade in beans has the following key characteristics:

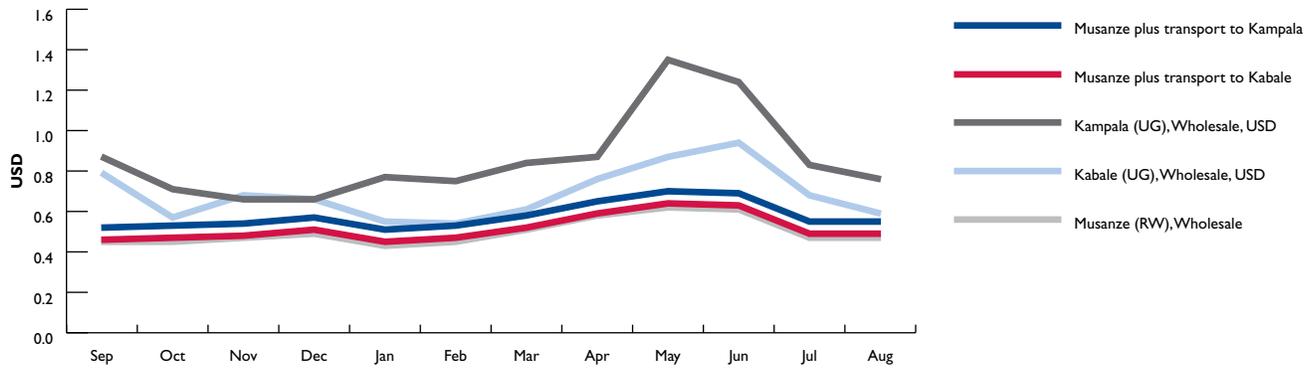
- » Limited (albeit increasing) volumes of trade in either direction.
- » Net trade surplus, driven mainly by exports to Uganda and the DRC.
- » A strong element of informality of exports, and conversely, largely formal imports.

These characteristics are further developed below, by considering the key determinants of trade: price, processing, seasonality, and trader demographics.

Price

The many different qualities of beans can confuse the analysis of price, but for the purpose of this assessment the lowest common denominator (mixed beans) was used to compare wholesale prices in Rwanda, Uganda, Burundi, and the DRC (Figure 13).

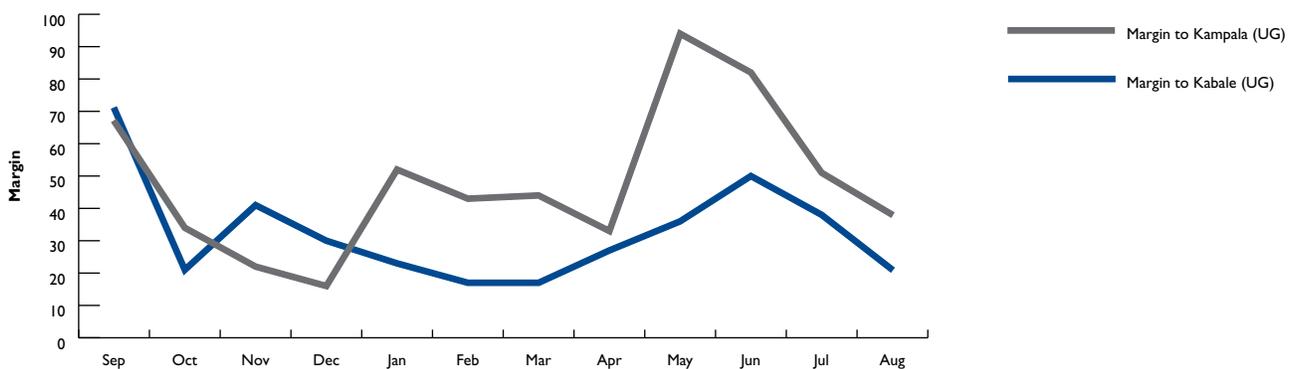
FIGURE 13: AVERAGE PRICES, 2009–2012



Sources: Rwanda eSoko price data; InfoTrade Uganda.

The average wholesale prices in Musanze (Rwanda) and Kabale (Uganda) show distinct peaks in November/December prior to the harvest of Season A and in May/June, just before the Season B crop comes onto the market. This latter peak is much more pronounced in Kampala (Uganda)—where monthly prices are more indicative of unimodal (single season) production—than in either Kabale or Musanze. Musanze in particular shows a much smoother price curve reflecting a relatively constant (albeit bimodal) supply of beans onto the market. Irrespective of price fluctuation, it is evident that beans sourced in Musanze are consistently cheaper than beans in Kabale or Kampala. Substantial margins still remain even when the cost of transport (calculated at \$0.15/MT/km) is added to the wholesale price. The margins, expressed as a percentage of the FOB cost, are shown in Figure 14.

FIGURE 14: MARGIN IN FORMAL AND INFORMAL TRADE IN BEANS FROM 2009–2012

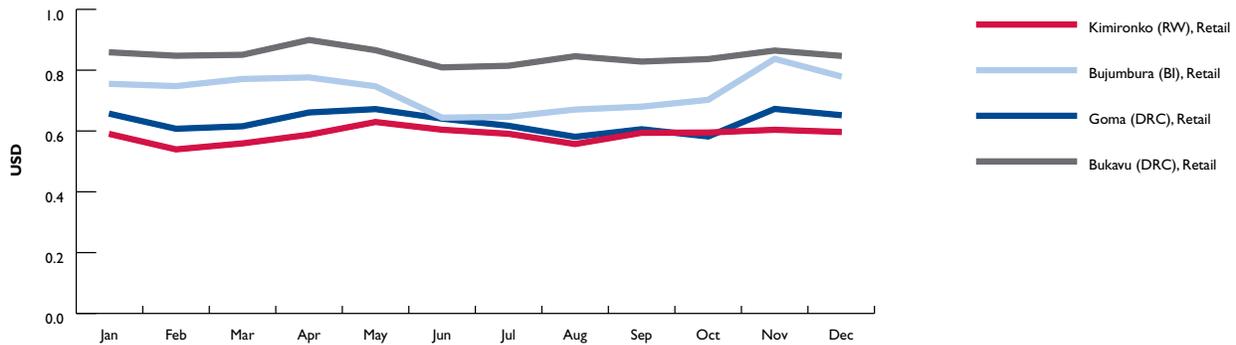


Sources: Rwanda eSoko price data; InfoTrade Uganda.

The highest margins occur immediately prior to the arrival of a new crop on the market. These theoretical margins are considerable and suggest that there should be significant export trade of beans into Uganda. Such trade does occur and beans from Rwanda are indeed found in Kabale market, but the volumes are relatively small, suggesting either that the costs of export are significantly higher than the cost of transport alone (and may include the costs of accumulating larger volumes or possibly informal fees for market entry) or that the beans are relabeled as coming from Uganda, to meet market preference.

In the case of Burundi and the DRC, only retail prices were available, but it is still possible to discern a distinct price advantage for Rwandan exports in Bukavu and Bujumbura, but not in Goma (Figure 15). Beans are produced in the area surrounding Goma, but further south in Bukavu, there is a profitable market for Rwandan beans throughout the year. In Bujumbura, the margin is greatest after the season A harvest (February–April). Although a margin thereafter does exist, it is doubtful if it would be enough to cover the costs of transport and trade.

FIGURE 15: FORMAL AND INFORMAL TRADE IN BEANS FROM 2009–2012



Sources: Rwanda eSoko; WFP; GIEWS Food Price Data and Analysis Tool; RATIN.

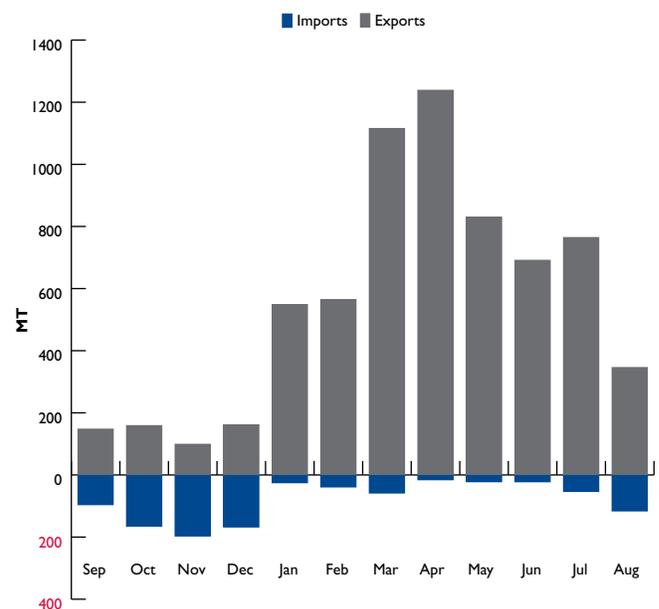
Processing

There is little processing of beans in Rwanda. One factory has begun processing “ready to eat” beans that do not require soaking before cooking, but apart from that, beans are generally traded in unprocessed form. The limited processing that does occur consists of cleaning and occasionally sorting beans to improve the presentation and retail price. Given the wide range of prices of the different beans, it might be thought that a margin could be derived by sorting mixed bean samples into their different component types. In practice, however, such a margin appears to be limited given that (a) some consumers express a preference for mixed beans and (b) the sorting is often done by women retail traders at the market when selling the beans. Therefore, the shadow cost of sorting beans at the market is very close to zero, so any margin to be gained by sorting prior to sale to retail outlets would be small.

Seasonality

It is significant that the seasonality of cross-border trade in beans with Uganda correlates best with the potential margins in the Kampala (Figure 16). The largest monthly volumes are exported into Uganda from January through to August. After August, only small volumes cross the border in either direction. It is probable that these smaller volumes reflect opportunistic responses to localized differences in price or to fluctuations in exchange rates. The production of beans in the region between Kisoro and Kabale is similar in its seasonality to that of Musanze and although the Kabale market is closer to Musanze than Kampala, prices are more similar for most of the year. It is unlikely that exports to this area would be viable except in May and June, when prices increase substantially (possibly as a result of the influence of the Kampala market). Thus, even though the Kampala market is farther from Musanze than Kabale, differences in seasonality of production could allow greater profit to be derived from exports to Kampala.

FIGURE 16: SEASONALITY OF BEAN TRADE WITH UGANDA, SEPTEMBER 2011 – AUGUST 2012



Sources: Calculations based on Rwanda eSoko price data, InfoTrade Uganda.

By contrast, the seasonality of production in Burundi is largely similar to that in Rwanda (although harvesting may occur slightly earlier in Burundi), and this is even more true for the DRC. As a result, beans are traded in both directions in response to localized differences in price and variations in exchange rate as well as the seasonality of production.

Trader Demographics

Interviews with stakeholders have repeatedly emphasized the costs of accumulating large volumes of beans of a consistent quality. The opportunistic sale of surplus volumes by households growing a crop primarily for food security requires traders to develop an extensive network of assemblers or agents in order to acquire significant volumes. This limits the profitability of formal trade. Theoretically, cooperatives could perform the function of aggregating volumes of beans, but in practice this has not occurred. As a result, much of the export trade is informal in nature, based on the accumulation and transport of small volumes. Nevertheless, such informal trade has a considerable reach. NBR informal trade monitors suggested that informal traders (predominantly from Rwanda) regularly carry beans across the border into Uganda on bicycles (thus avoiding withholding tax) and offload them a short distance away from the border, until they had accumulated five MT or more. They would then hire a small truck to transport the beans as far as Kampala.

The regularity of such informal trade suggests that the profitability of formal trade, and hence the potential volume of exports from Rwanda to Uganda, could be increased if the bean trading sector within Rwanda were more developed. However, the small-scale nature of bean production constrains formalization by restricting the ability of traders to collect significant volumes of beans. Farmers need to be incentivized to produce consistent surpluses of specific types of beans to meet traders' requirements. This will require developing linkages between traders and the farmers supplying them, as opposed to opportunistic purchases at weekly markets or sales to itinerant assemblers.

Conclusions

Analysis of the trade and price data for beans suggests the following:

1. Beans are produced primarily for household food security and the volumes available for export represent a relatively small proportion of total national production.
2. Nevertheless, beans produced in Rwanda can be competitively marketed in Burundi, Uganda, and the DRC.
3. Of these three, the market for beans into Uganda appears to be the most promising, especially in Kampala, because it is based on differences in the seasonality of production.
4. Conversely, seasonality of production is similar in Rwanda, Burundi, and the DRC. Opportunities for increasing Rwanda's export volumes to these other countries exist, but can be expected to be more limited.
5. Although theoretical export trade margins into Uganda are large, the costs of accumulating large volumes of beans are high, so that the export trade is limited in volume and is mainly restricted to small lots transported by informal traders.
6. If adequate support can be provided to develop efficient trading networks that minimize the transaction costs between producers and consumers in neighboring countries, then the export market for beans can be expected to increase substantially. Given the current low levels of export, **a short-term increase of 100 percent in export volumes is quite feasible and further increases could readily be achieved in the long term.**

Recommendations

Rwandan beans can be produced at a price that is competitive in neighboring markets, especially in Uganda. The main constraint to increased export trade lies in the cost of accumulating a marketable volume of beans of consistent quality. Increased exports will be possible if the transaction costs between the farm-gate and exporter can be reduced. This will require a shift from the opportunistic sale and purchase of beans to the development of market linkages between producers and exporters in order to encourage the regular production of larger volumes of beans of a consistent quality. This can be achieved through interventions that support:

- » Trader-sponsored farmer field days to sensitize farmers to market requirements, in particular reinforcing the types and quality of beans that are most in demand on the market and the traders' willingness to purchase once the crop has been produced.
- » Better price dissemination, such as through the ESoko technology currently being piloted in Malawi.⁶⁴
- » Trader business development through training in accountancy and basic business principles.

None of the above activities are specifically related to beans. Indeed all of them will help to develop linkages between traders and producers that could be relevant to market maize, rice, or milk, but it is in this key area (market linkage development) that the bean value chain is most weak and requires the greatest support.

It might be argued that such linkages might be formed equally well by strengthening producer cooperatives to undertake both production and marketing functions. The responses of stakeholders suggested that while this may be theoretically possible, a more enthusiastic response might be obtained through the participation of private sector traders.

⁶⁴ This system is not the same as the Rwandan ESoko MIS, but allows traders to publicise prices to farmers in real time through email-initiated SMS messaging.

IRISH POTATOES

Overview

Irish potatoes are the second most important staple in Rwanda. EICV3⁶⁵ data indicates that they constitute 7.6 percent of all food purchases, and 8.3 percent of all food consumption. The country produces a number of different potato varieties, some of which are recognized throughout the region. These vary in taste and cooking characteristics as well as their adaptation to specific soil types. The variety Chinije is particularly prized for its taste and chipping characteristics. This assessment suggests that while further market development is possible in Burundi and the DRC, greater possibilities exist in both Tanzania and Uganda if the utilization of existing return haulage capacity is improved.

Production

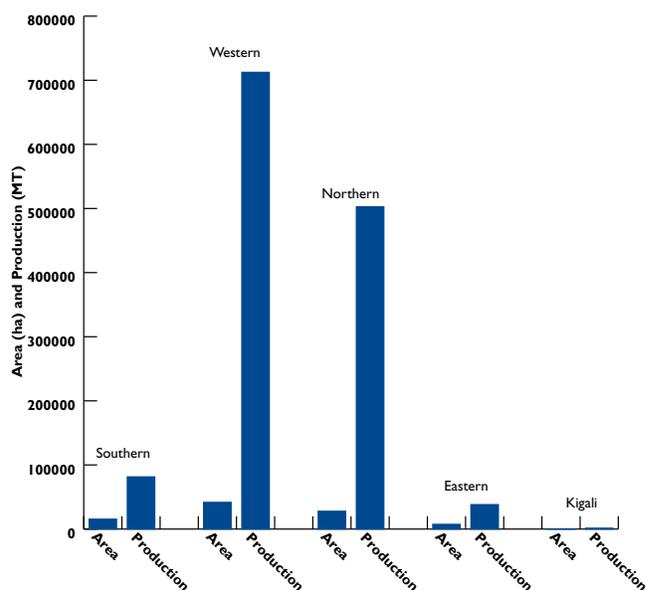
Data for 2012A indicates that 60 percent of potato production is concentrated in just three districts: Niyabihu (19 percent) and Rubavu (23 percent) in Western Province, and Musanze (20 percent) in Northern Province. In these districts, potatoes constitute a major cash crop. By contrast, Kigali and the Southern and Eastern Provinces produce less than 10 percent of the national total. The high levels of production in these three districts are attributable to higher levels of rainfall, which allow the crop to be grown three times during the year. In Musanze, for example, potatoes are harvested in December/January, April/May, and August/September, although the significance of the third harvest is debatable.

Production data shows that while the area of potatoes sown has increased slightly the last decade, average yields have increased by 50 percent and production overall has increased by 60 percent (Figure 18). Overall, production ranged between 1.4 million MT and 2.2 million MT over the last three years, and for 2012, is estimated to exceed 2 million MT.

Consumption

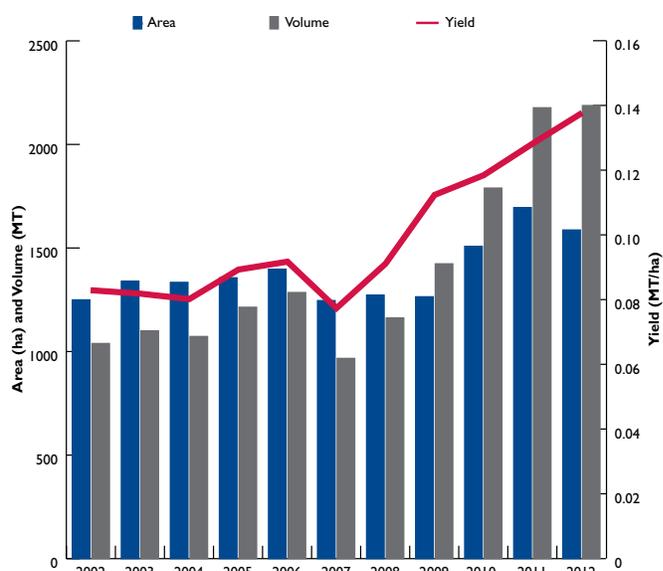
Although the distribution of potato production is limited, the commodity is consumed throughout the country. EICV3⁶⁶ data indicates that urban consumption in 2010/11 was approximately 125,000 MT, while rural consumption was 640,000 MT. Total domestic consumption is therefore estimated at 765,000 MT. A further 120,000 MT was used for seed, bringing total domestic utilization in 2011 to approximately 885,000 MT. This is somewhat lower than the MINAGRI production estimate.

FIGURE 17: DISTRIBUTION OF POTATO PRODUCTION (2012A)



Source: MINIAGRI Crop Assessment Season 2012A.

FIGURE 18: TRENDS IN AREA, VOLUME, AND YIELD OF POTATOES, 2002–2012



Sources: FAOStat 2002–2007; MINAGRI AMIS Crop Assessment Reports 2008–2012.

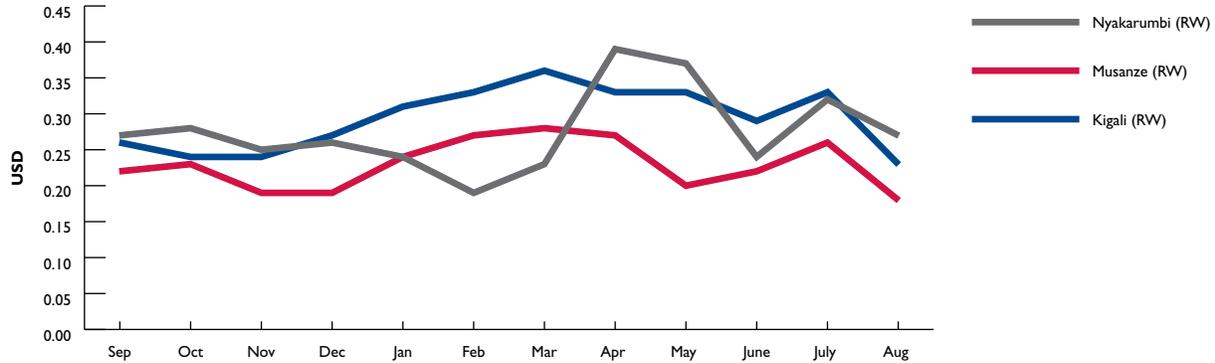
⁶⁵ National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011.

⁶⁶ National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011.

Marketing

EICV3⁶⁷ data indicates that 55 percent of consumption, equivalent to 420,000 MT, was sourced from the market in 2011. This high proportion suggests that the market for potatoes should be well-developed, but this does not always appear to be the case (Figure 19).

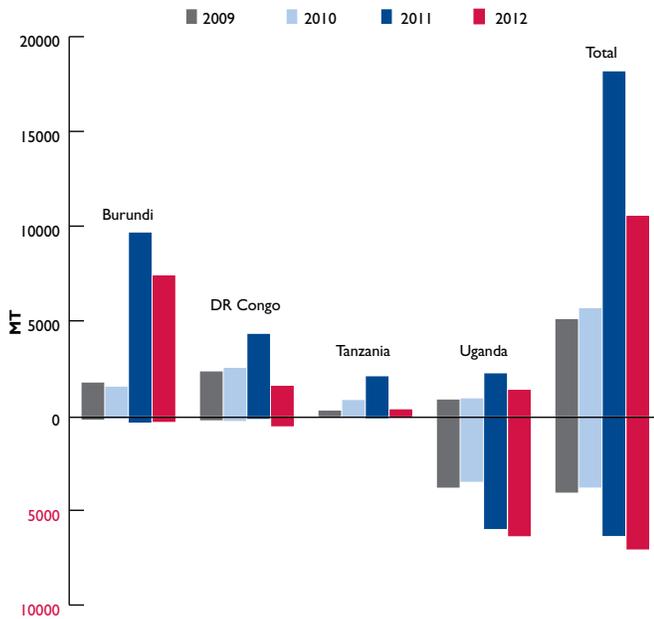
FIGURE 19: RETAIL PRICES, 2009–2012



Sources: Rwanda eSoko; InfoTrade Uganda.

eSoko price data shows that although markets in Musanze and Kigali are well-integrated, prices in other rural markets (such as Nyakarumbi) fluctuate independently, suggesting that they are not well-served by potato traders. Interviews with stakeholders indicated that, as is the case for beans, there are few large commercial buyers, although many small traders use 5–10 MT trucks to distribute potatoes within the country.

FIGURE 20: TOTAL POTATO EXPORTS, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

Cross-Border Trade

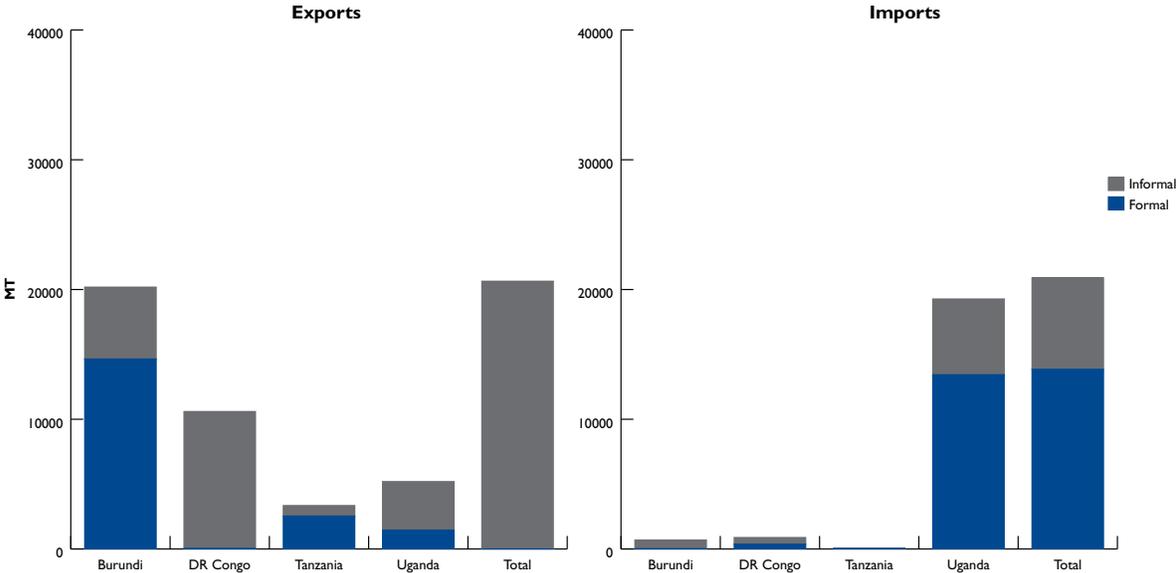
The trade data for potatoes shows that over the last four years Rwanda has been a net exporter of this commodity (Figure 20). Nevertheless, as is the case for beans, the volumes traded are surprisingly low.

When compared with either production or consumption levels, cross-border trade in potatoes has been very limited. Exports over the last four years have averaged only 10,000 MT, equivalent to 1.2 percent of estimated consumption, while imports have been only 5,000 MT or 0.6 percent of consumption. The consistently small trade volumes suggest that export markets might be limited. Discussions with traders suggested that exports could be increased when Rwandan potatoes were at their cheapest, but that the potatoes did not store well; therefore, traders in importing countries only purchased what they could sell immediately. This storage problem appeared to be primarily due to early harvesting of immature tubers.

⁶⁷ National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011.

Almost all (92 percent) of potatoes imported into Rwanda originate from Uganda. Small volumes of potatoes are imported from Burundi and the DRC, but imports from Tanzania are negligible. The majority of exports have been to Burundi (51 percent) and the DRC (27 percent), although smaller volumes have also been exported to Tanzania and Uganda. Exports of potatoes from Rwanda are almost exclusively informal into the DRC and predominantly formal into Tanzania and Burundi, because of the distance between potato-producing regions in Rwanda and cross-border markets in Mwanza and Bujumbura.

FIGURE 21: FORMAL AND INFORMAL TRADE IN POTATOES FROM 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

By contrast, the areas producing potatoes in Uganda and Rwanda lie close to the common border so that informal trade is routine and easy in either direction, according to the season. Data from the NBR suggests that the majority of imports from Uganda have been through formal channels (66 percent). This observation is in keeping with the open nature of EAC trade, which provides incentive to engage in formal trade. Nevertheless, it is possible that informal imports may be greater than the NBR data suggests. In-person observations of the informal trade across the border post at Kyanika (between Kisoro and Musanze) indicated that number of bicycles carrying potatoes across the border post was small. However, a much larger volume of traffic was observed passing along the road between the border post and Musanze, suggesting that a substantial volume was entering Rwanda at other, unofficial crossing points. In fact, customs officials at the border confirmed that the level of undocumented trade was high.

It is also possible that a significant volume of potatoes exported to Burundi actually originate in Uganda. Market observations indicated that the potato crop at Ruhengere in the second week of November was almost all at the flowering stage and the market was being supplied by imported immature potatoes coming across the border from Uganda. One week later in Burundi, markets were found to contain potatoes that were reputedly from Ruhengere, but which were identical in their immature condition to those being imported to Ruhengere from Uganda.

Overall, cross-border trade in potatoes has the following key characteristics:

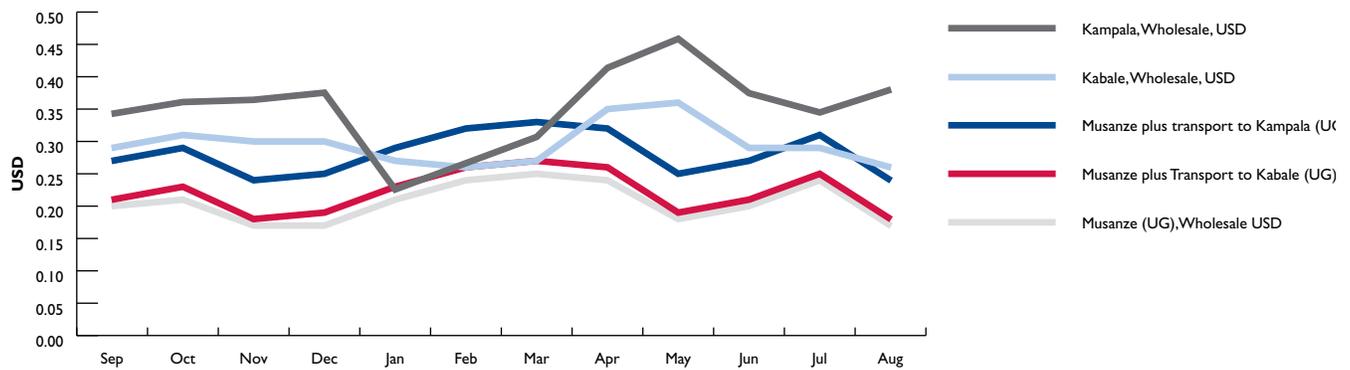
- » Negligible imports from any country other than Uganda.
- » Limited (albeit increasing) volumes of trade in either direction.
- » Net trade surplus, driven mainly by exports to Burundi and the DRC.
- » Mostly informal exports to the DRC and mostly formal imports from Uganda.

These characteristics are further developed below, by considering the key determinants of trade: price, processing, seasonality, and trader demographics.

Price

Comparing monthly wholesale prices in Musanze with prices in Kabale and Kampala (Figure 22), Musanze potatoes are least competitive in Ugandan markets between January and March. However, the remaining months offer profit opportunities, with potential margins highest in November/December and May. Conversely, for producers in Kisoro in Uganda, located only 40 km from Musanze, the Kampala and Kabale markets would be less profitable from January to March than the Musanze market, and their potatoes would therefore be exported into Rwanda.

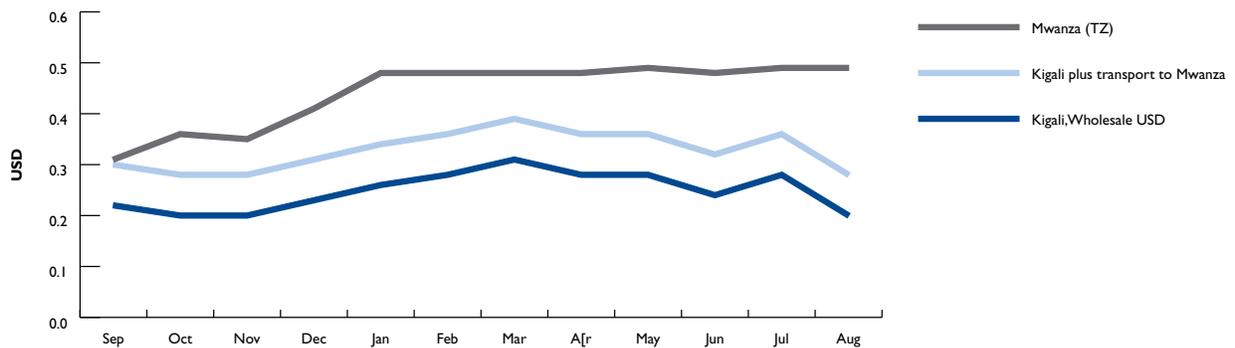
FIGURE 22: AVERAGE PRICES BETWEEN RWANDA AND UGANDA, SEPTEMBER 2011 – OCTOBER 2012



Sources: Rwanda eSoko price data; InfoTrade Uganda.

Potentially higher margins exist for potatoes exported through Kigali into Tanzania (Figure 23). Throughout the Akagera region and as far as Mwanza, prices of potatoes in November 2012 significantly exceeded the price in Kigali. Most of the potatoes that were in the markets had been sourced from Uganda, and were selling at US\$0.60/kg or more (i.e., at least double the wholesale price in Kigali), suggesting that a substantial market could exist for the Rwandan product (approximately two million people), if a trading network were developed.

FIGURE 23: AVERAGE PRICES BETWEEN RWANDA AND TANZANIA, SEPTEMBER 2011 – OCTOBER 2012



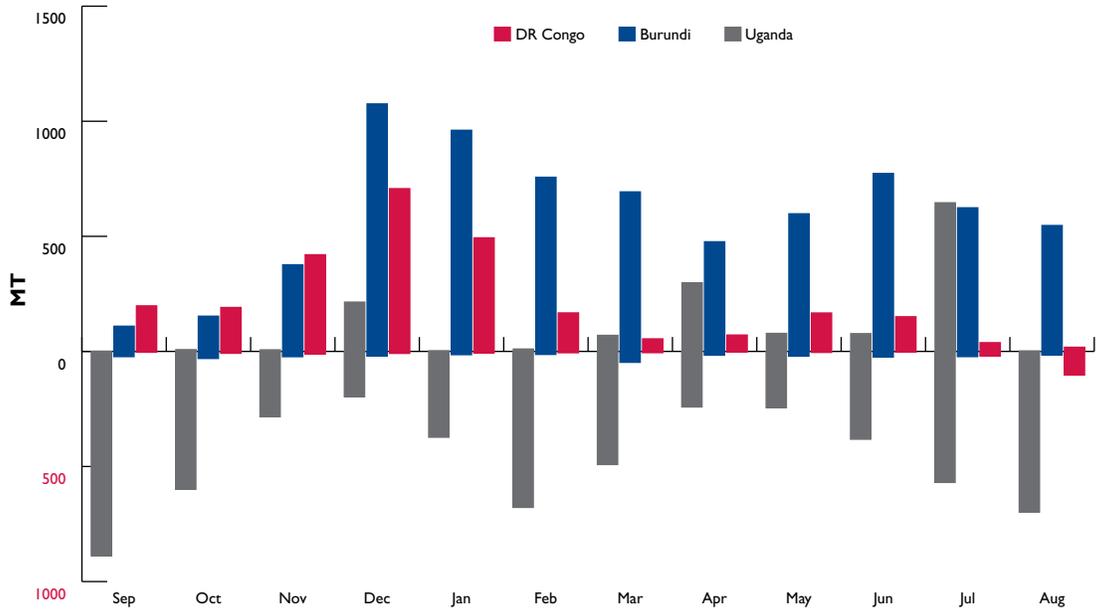
Sources: Rwanda eSoko price data; FEWSNET Tanzania.

A similar situation exists in Kayanza, Burundi, where “Ruhengere potatoes” sell at a premium of approximately USD\$0.10 over local varieties. Although monthly price data could not be obtained, traders reported that prices for “Ruhengere potatoes” in Kayanza could be as high as \$0.50/kg in October, falling to \$0.40/kg in November and \$0.33/kg in December, at which point the market was no longer attractive (since the price in Kigali would be climbing above \$0.25/kg, so that after accounting for the cost of transport and local taxes, the profit would be negligible). To the south, in Bujumbura, prices are higher and exports remain viable all year round.

Seasonality

The seasonality of the potato trade reflects the domestic production cycle. When local supplies are low and prices high, potatoes enter Rwanda from Uganda and exports to Burundi and the DRC are reduced. Conversely, immediately after harvest, supplies are abundant (in December and May), leading to low prices and minimal imports from Uganda—and exports peak. This peak export market could be expanded if potatoes were harvested in a mature condition that would allow for improved storage. As previously noted, many of the Ruhengere potatoes seen in export markets were immature and would not keep, thus limiting potential purchases.

FIGURE 24: TRADE SEASONALITY, 2011–2012



Sources: FAO; InfoTrade Uganda; WFP.

Trader Demographics

Potatoes are grown as a cash crop and trader demographics reflect this. Five large importers using 20-MT trucks dominate the trade into Burundi. They may use agents or assemblers to accumulate the necessary volumes of potatoes in Rwanda but they control the majority of the market in Burundi and sell to smaller traders and retailers on credit.

Trade into the DRC occurs informally. Trade into and out of Uganda appears to take place mainly through and around the Kyanika border post. Exports into Uganda are predominantly informal, whereby small traders take advantage of the occasional opportunistic market in Kisoro and the surrounding region. On the other hand, imports from Uganda occur through both formal and informal channels. Informal traders can penetrate as far as Musanze (20 km) by bicycle and will sell into the market there, although some choose to travel only 8 km to a transit market run by Rwandan women, where potatoes are sorted, weighed, and re-bagged for purchase by larger traders who will most probably sell in Kigali or possibly Burundi. This shorter distance option allows informal traders (who are exclusively young men) to make more than one bicycle trip across the border per day.

Conclusions

Analysis of the trade and price data for potatoes suggests the following:

1. Potatoes are very often produced as a cash crop, especially in the three main production districts, where producers are attuned to capturing the best market prices.
2. Trade patterns suggest that the third season of potato production (May to September) is less significant than MINAGRI crop assessments have assumed.
3. Although a very substantial proportion of production stays in Rwanda, potatoes are competitively exported to Burundi and the DRC throughout the year and could also find a market in Uganda for limited periods of the year, if efficient trade linkages were developed.
4. A potential market also exists in Tanzania, where potatoes could be competitively exported even as far away as Mwanza.
5. Overall, observations in neighboring countries suggest that there is considerable potential to increase Rwanda's potato exports. **Volumes could be expected to at least double through market development in Tanzania and Uganda, and informal observation suggests that further increases might be possible if linkages to Burundi and the DRC could be strengthened.**

Recommendations

1. Rwandan potatoes can be produced at a price that is competitive in neighboring markets. The main hurdle to increased export trade is developing efficient trade networks into Uganda and Tanzania, taking advantage in particular of the substantial hauling capacity that is returning empty through Kampala and Mwanza.
2. It appears that empty trucks return to Mombasa and Dar es Salaam almost immediately, without looking for a return load (although drivers often load small volumes of charcoal, beans, potatoes, or other saleable commodities to make a small profit from their journey). The development of a transport clearing house that would allow returning trucks to advertise their services (and exporters to advertise their needs—would help take advantage of this unexploited resource.⁶⁸

⁶⁸ It is possible that the SMS technology utilised in the Ghanaian 'esoko' market information system might be appropriate to develop such a clearing house, although it might need to be developed on a regional basis to be most effective.

WHEAT

Overview

As a CIP crop, Rwanda's wheat yields have doubled since 2008, although the domestic market has remained small. A Rwanda Agricultural Board (RAB) program has been ongoing since 2008, with the goal of introducing new varieties and increasing the use of inputs.⁶⁹

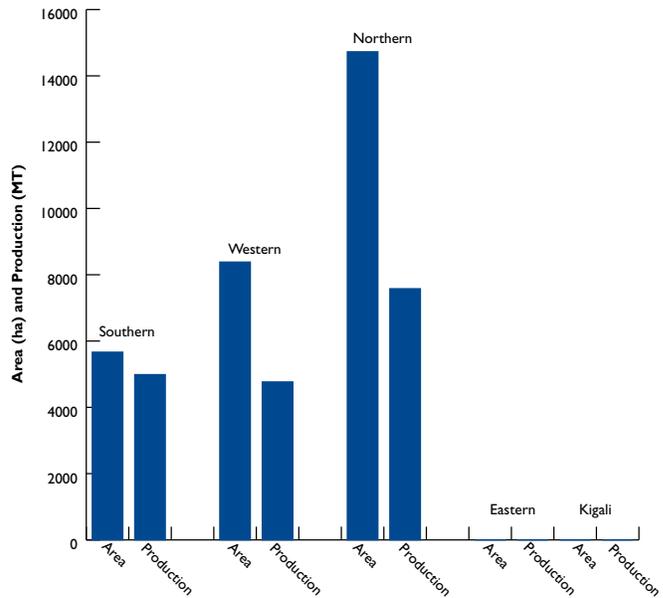
However, the market has been constrained by the genetic makeup of Rwandan wheat. With low protein levels (approximately 9 percent) and poor protein quality, Rwandan wheat is unsuitable as bread wheat. Instead, it is used for making chapatis, biscuits, porridge, or for blending with higher quality wheat. As a result, the two large commercial wheat mills in Rwanda⁷⁰ cannot use the domestic production at all, and are obliged to import grain from abroad (primarily from Russia, currently). Farmers in Gicumbi, one of the main production areas, have recently complained to their District Authorities that there is no market for their production, but the matter remains unresolved.⁷¹

Production

In 2011, wheat was grown at elevations above 1900 m in 11 districts, with 51 percent in the Northern Province, 29 percent in the Western, and 20 percent in the Southern Province (Figure 25). Over the last four years, 45 percent of production has been derived from Season A (September to February) and 55 percent from Season B (March to July). Most of the crop is harvested over a relatively short period in each season. Fertilizer usage on wheat has increased from 7kg/ha in 2011 to 23kg/ha in 2012. New varieties are being introduced but continue to be susceptible to fungal disease; as a result, yields of 1.5 MT fall short of potential yields of 3.0–3.5 MT.⁷²

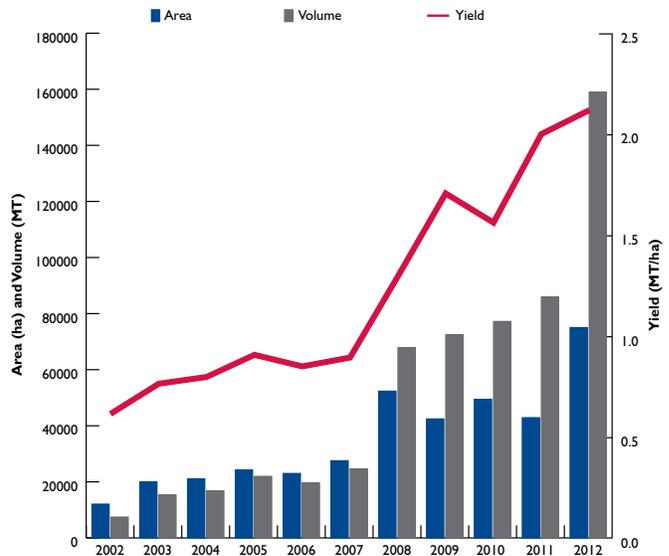
Production data shows that the area of wheat sown increased substantially in 2008 (following the introduction of the CIP), fluctuating around 40,000 ha thereafter. With the exception of 2012, production has averaged between 70,000 MT and 85,000 MT over the last five years, but for 2012, is estimated to exceed 159,000 MT.⁷³

FIGURE 25: DISTRIBUTION OF WHEAT PRODUCTION (2011B)



Source: MINAGRI Crop Assessment 2012A.

FIGURE 26: TRENDS IN AREA, VOLUME, AND YIELD OF WHEAT, 2002–2012



Sources: FAOStat 2002–2007; MINAGRI AMIS Crop Assessment Reports 2008–2012.

⁶⁹ Rwanda Agricultural Board (RAB), Potential for Profitable Wheat Production in Rwanda (2012).

⁷⁰ Bakhresa Group and Pembe Milling.

⁷¹ Umuhinzi, "Wheat Farmers Lack Market for the Produce" (December 9, 2012).

⁷² Ministry of Agriculture and Animal Resources (MINAGRI), Crop Assessments, 2009–2012.

⁷³ For 2012, there is a large inconsistency in the data. MINAGRI crop assessment for the 2012A season noted a decline in production of 71 percent mainly due to a 64 percent reduction in the area sown (as compared with season 2011A). Nevertheless, RAB reported that overall production in 2012 (Seasons A and B) had increased from 86,000 MT to 159,000 MT.

Consumption

EICV3 does not report the consumption of wheat in rural areas, and respondents indicated that most of the wheat produced is toll-milled and consumed at home in the form of porridge. The consumption of wheat as bread is reported for urban areas, and estimated at 4,000 MT.⁷⁴ All of this wheat is sourced from the market. Considering that a bushel of wheat (60 lbs.) will make 63 one-pound loaves of white bread,⁷⁵ this consumption would require no more than 3,800 MT of wheat.

Marketing

As already noted, none of the wheat currently produced in Rwanda is purchased by the two large commercial mills that operate in the country. Instead, wheat is typically sold in rural markets either directly by producers or through small traders who buy from farmers and sell to retailers. The retailers in turn sell the wheat to housewives who will mill it in small parcels (by toll milling) and consume it when needed. Commercial millers reported that cooperatives played no role in aggregating volumes of wheat. The current small-parcel trade makes it nearly impossible for commercial mills to acquire significant volumes of wheat cost-effectively—even if the quality were improved.

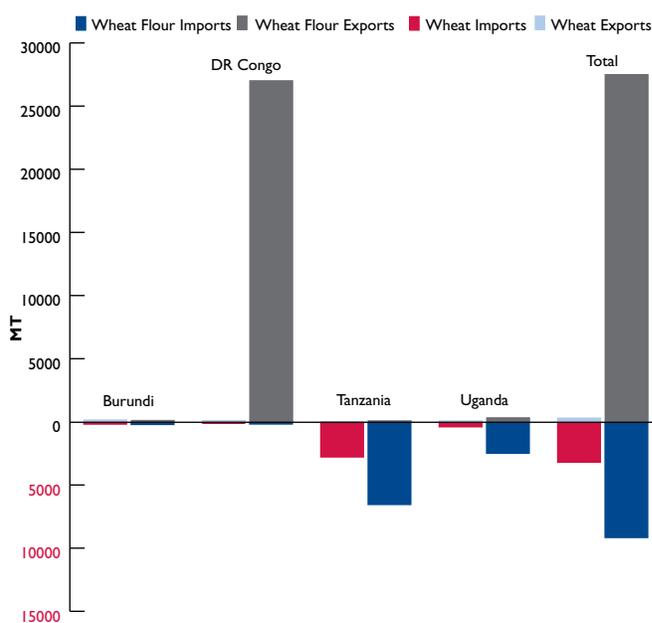
The wheat flour offered in retail markets is produced from imported wheat or is imported as flour. The wheat flour produced in Rwanda is marketed through networks of local agents who distribute to retail outlets at prearranged prices. Although there are only two producers in Rwanda, it would appear that the market for quality bread flour is competitive. The total milling capacity is reportedly 20,000 MT/month. The current level of utilization of the mills is 52 percent.

Cross-Border Trade

Globally, Rwanda is a net importer of wheat and a net exporter of wheat flour. In 2011, total imports of wheat from all sources were 82,745 MT for wheat and 2,107 MT for wheat flour. For the same period, total exports were 186 MT for wheat and 9,074 MT for wheat flour.⁷⁶ These figures represent an almost four-fold increase in wheat imports and a 30-fold increase in wheat flour exports since 2009,⁷⁷ reflecting the establishment of Rwanda's commercial mills. Because much of the wheat flour exported out of Rwanda comes from wheat produced outside the EAC, it is not recorded as cross-border trade. However, the cross-border trade data for wheat suggests that over the last four years Rwanda has been a net exporter of wheat flour, almost exclusively to the DRC (Figure 27).

Some small amounts of wheat from Tanzania and Uganda are imported into Rwanda to be blended with higher quality wheat. Some wheat flour produced either in Tanzania or Uganda also enters the country. Nevertheless, the bulk of the wheat from which the exported flour is produced is high quality bread wheat (14 percent protein or more) that is not produced in tropical Africa.

FIGURE 27: TOTAL CROSS-BORDER WHEAT AND WHEAT FLOUR TRADE, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

⁷⁴ This estimate is based on a bread price of RWF1000 per 500 gm loaf.

⁷⁵ Whole Grains Council, Wheat July Grain of the Month, <http://wholegrainscouncil.org/whole-grains-101/wheat-july-grain-of-the-month>.

⁷⁶ United Nations, Comtrade (December 2012).

⁷⁷ Imports of maize[?] in 2009 were 22,843 MT for wheat and 5,402 MT for wheat flour. Exports for the same period were 320 MT of wheat flour, with no exports of wheat. United Nations, Comtrade (December 2012).

The majority of imported wheat enters Rwanda formally. Exports are predominantly informal and are of such a low volume that they may represent locally produced wheat traded in small parcels, mainly with Burundi. Most imported wheat flour also enters through formal channels. Also formally traded—and somewhat surprisingly—are the vast majority of Rwanda’s wheat flour exports, even though they are exclusively directed to the DRC. This is unexpected since most other exports from Rwanda to the DRC are informal. Interviews confirmed that at least 1,500 MT/month is formally exported to the DRC. Because of competition in the DRC market from Uganda and Tanzania, the more conventional channel of marketing quality wheat flour into Gisenyi or Cyangugu for subsequent informal transport into the DRC does not guarantee a consistent market share.

Overall, cross-border trade in wheat and wheat flour has the following key characteristics:

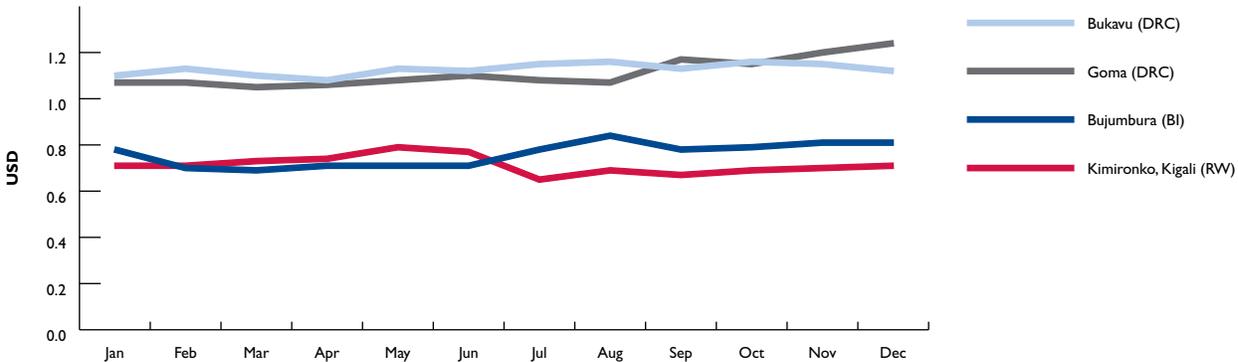
- » Negligible volumes of trade in domestic wheat—or wheat produced anywhere in the EAC—with the exception of Tanzania.
- » Increasing import volumes of high quality bread wheat, driven by the two large commercial milling operations in Rwanda.
- » Increasing export volumes of quality wheat flour into the DRC market, and to a lesser extent Burundi, derived from wheat produced outside Africa.

These characteristics are attributable to the current low quality of domestic wheat and to the impact of price, which is analyzed below.

Price

The retail prices of wheat flour in Kigali, Bujumbura, Goma, and Bukavu are shown in Figure 28. The Figure reflects little margin between Kigali and Bujumbura and therefore, trade between Rwanda and Burundi will be limited and opportunistic. The potential advantage of the DRC market is more apparent.

FIGURE 28: AVERAGE RETAIL PRICES FOR WHEAT FLOUR, 2010–2012



Sources: Rwanda eSoko; WFP; FAO.

Nevertheless, both commercial mills noted that wheat flour could be produced more cost effectively in either Uganda or Tanzania than in Rwanda and then trucked into the country. In Rwanda, costs in Kigali are higher than in Byumba, but in both cases the cost of power (quoted to be \$0.23/Kwhr) and levels of taxation increase domestic production costs. Both mills also noted that the difficulties of operating in an unresponsive administrative climate have a major impact on profitability. For this reason, there are no exports of wheat flour into either Tanzania or Uganda. Instead, wheat flour is sometimes imported from these countries, because they can produce it more cheaply.

Circumstances may eventually justify new investment in Rwanda’s milling capacity, but Rwanda’s entry into the EAC has eroded the competitiveness of its existing wheat mills.

Conclusions

Analysis of the trade and price data for wheat and wheat flour suggests the following:

1. Wheat produced in Rwanda is not suitable for producing bread flour. Although it might be adequate for chapattis and similar unleavened bread, domestic production has only a small export market.
2. Even if suitable wheat varieties were successfully grown, the market linkages between producers and mills remain to be developed.
3. Consequently, all commercially produced wheat flour is derived from imported wheat, produced mainly outside the EAC.
4. The main export market for wheat flour is formal trade into the DRC. This market has been growing over the last four years.
5. Despite the growth of exports to the DRC, millers note the difficulty of remaining cost-competitive when producing under the current, costly Rwandan administrative and industrial environment.

Recommendations

1. Rwanda has no obvious comparative advantage in either producing bread wheat or processing wheat into flour. The only reason for investing in milling capacity within Rwanda is the access that Rwanda provides to the DRC market. Given these facts, and since wheat flour is predominantly traded into the DRC through formal channels, it is recommended that an administrative system of bonded production⁷⁸ be developed. Such a system would allow wheat to be imported to the commercial mills without paying duty or VAT and exported directly into the DRC without passing through the commercial market in Rwanda. This would increase the competitive advantage of Rwandan wheat flour in the DRC market.
2. Existing constraints on the production of high protein bread wheat should be accepted and greater attention paid instead to producing, marketing, and processing the low-protein wheat that can be produced in Rwanda. The fact that producers cannot sell their surplus wheat is as much due to the poorly developed marketing channels as it is to the limited usefulness of current production, which, if it could be accumulated in economically viable volumes, could still be blended with imported wheat to make flour suitable for chapattis. Limited access to markets prevents even this possibility. The range of measures necessary to achieve this would include:
 - (a) Developing improved drying and storage facilities.
 - (b) Developing cooperative and individual trader capacities, in terms of (i) financial management, (ii) grain storage management, and (iii) marketing.

⁷⁸ Under a bonded production system, wheat could be imported under bond and processed for export in a facility isolated from the domestic market, without paying import duties.

RICE

Overview

Rice is a relatively new crop to Rwanda, having been introduced only in the last 60 years. Nevertheless, rice is widely consumed and considerable volumes are imported from neighboring countries and from Asia.

As a CIP crop, rice production has been supported by the Government of Rwanda (GoR). The GoR has administered the construction of community-based irrigation systems in the valley floors, is continuing to introduce new varieties suitable to the soils and climate of the country, and is also installing mills in many of the main production districts.

As a commodity, rice is extremely variable in terms of quality and price. Current prices range from RWF600/kg to RWF1200/kg depending on taste, color, grain size and consistency, and cooking quality. For consistency, this assessment has attempted to compare the most common types of rice available in Rwanda's rural and wholesale markets. On this basis, there appears to be potential for increased import substitution, based largely upon improved postharvest handling, although the market for exports is limited by competition from lower cost extensive production in Tanzania.

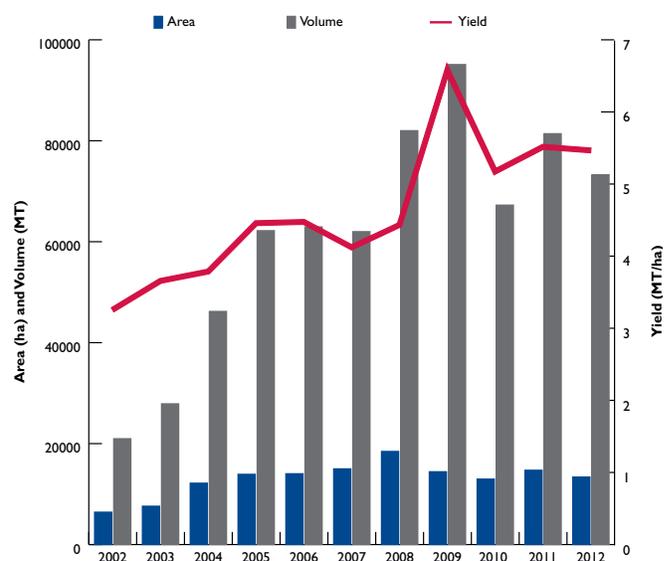
Production

The largest area of rice production is in Eastern Province (40 percent), followed by Southern Province (36 percent), and Western Province (21 percent), with 90 percent of production in Western Province coming out of Rusizi. Production is about evenly divided between Season A (46 percent) and Season B (54 percent). MINAGRI statistics indicate (and Figure 29 reflects) that production area and yields peaked in 2009, but have since remained at a relatively stable level of production, around 70,000 MT and 5.5 MT/ha. This is a relatively high yield for the small-scale production of paddy rice, comparable to that achieved in Vietnam (5.3 MT/ha) and higher than Thailand (2.8 MT/ha) or Bangladesh (4.2 Mt/ha) in 2011.

Consumption

Rice is a key component of both urban and rural diets. EICV3⁷⁹ data shows that rice is the single largest component of urban food consumption (7.5 percent), but less important in rural areas (2.6 percent). These figures correspond to urban and rural consumption volumes of 32,000 MT and 43,000 MT respectively, indicating that national rice consumption in 2011 was 75,000 MT (roughly equivalent to the EICV3 statistics for maize meal). At an average milling output of 62 percent, this level of consumption is equivalent to 120,000 MT of paddy rice. Factoring in post-harvest losses of 13 percent,⁸⁰ and seed requirements (480 MT), suggests a total utilization of 138,000 MT of paddy rice. Incorporating the 2011 trade deficit of 24,000 MT rice (38,000 MT of paddy), domestic production would appear to be 100,000 MT. This estimate exceeds the MINAGRI production figures for 2011 (both harvests) of 81,000 MT, implying that demand exceeded predicted availability by 19,000 MT (13 percent).⁸¹

FIGURE 29: TRENDS IN AREA, VOLUME, AND YIELD OF RICE PRODUCTION, 2002–2012



Sources: MINAGRI 2002–2011; estimates used for 2012.

⁷⁹ National Institute of Statistics of Rwanda (NISR), Third Integrated Household Living Conditions Survey (EICV3).

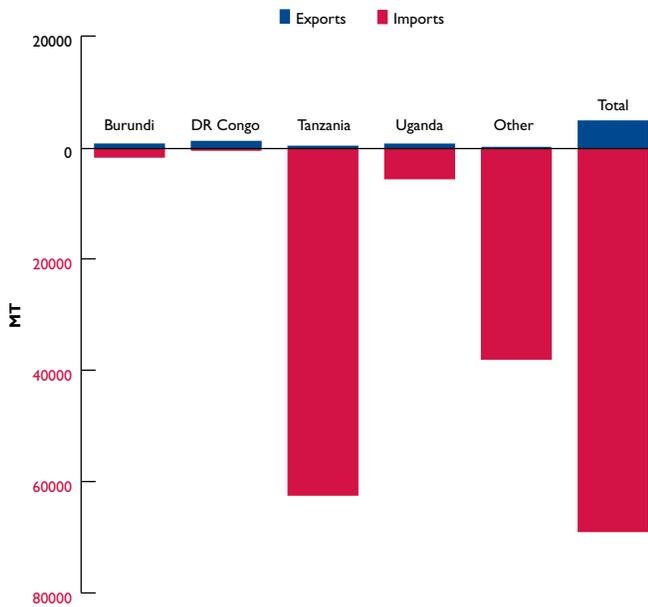
⁸⁰ FAO, "Post-Harvest Losses: Discovering the Full Story," Agro Industries & Post-Harvest Management Service (AGSI).

⁸¹ Given the inevitable errors in extrapolating data from different sources (EICV3, MINAGRI, Customs, and the National Bank), this is not unreasonable.

Marketing

In the past, the low quality of rice in Rwanda—and the low prices paid to farmers—have been attributed to the large number of small rice mills and multiplicity of traders. This situation is now changing; the GoR has recently decreed that only cooperatives of rice farmers are authorized to sell and distribute paddy rice and then only to rice mills licensed by MINICOM, under a written contract. A limited number of mills, mainly those established by the government, have been licensed to cooperatives, providing a 40 percent shareholding requirement and management responsibility. These mills should produce and package paddy rice according to industry standards for sale to wholesale and retail outlets. The impacts of this initiative have yet to be determined, although it is likely to reduce the number of small players in the market.

FIGURE 30: TOTAL CROSS-BORDER RICE TRADE, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

Cross-Border Trade

The cross-border trade data for rice grain⁸² shows that over the last four years Rwanda has been a net importer of the commodity (Figure 30). Exports constitute a very small proportion (7 percent) of total trade, with 43 percent of these going to the DRC.

Imports are sourced mainly from Tanzania, although significant volumes are also imported from Pakistan. Uganda and Burundi together provide no more than 6 percent of total imports. Imports from Tanzania could be greater if the Tanzanian government did not periodically ban the export of cereals, notably rice and maize.⁸³ The uncertainty created by this volatile trade environment undoubtedly hinders exports of Tanzanian rice, but could boost the development of export markets by other countries.

Rice trade with Tanzania is almost exclusively formal, with 98.5 percent of Tanzanian rice entering Rwanda through formal channels. It is assumed that all rice coming from Pakistan is also

traded formally. Given the imposition of a 30 percent duty on non-EAC rice, there is an incentive for informal trade, but as a practical matter, it is difficult to change a formally declared shipment into an informal one. Some traders considered this unlikely to happen, but others noted that rice has entered Kenya from Pakistan without payment of duty as part of a trade agreement to exchange the rice for Kenyan tea. Some claim that rice has entered Rwanda at a price of RWF 240/kg (less than the GoR recommended floor price for paddy rice of RWF265/kg), thereby undercutting local market prices.

⁸² Trade in paddy rice is negligible, equivalent to less than 0.5 percent of total trade.

⁸³ A ban on rice export was imposed in 2010, lifted in 2011, re-imposed in 2012 and as of December 2012 has been lifted again.

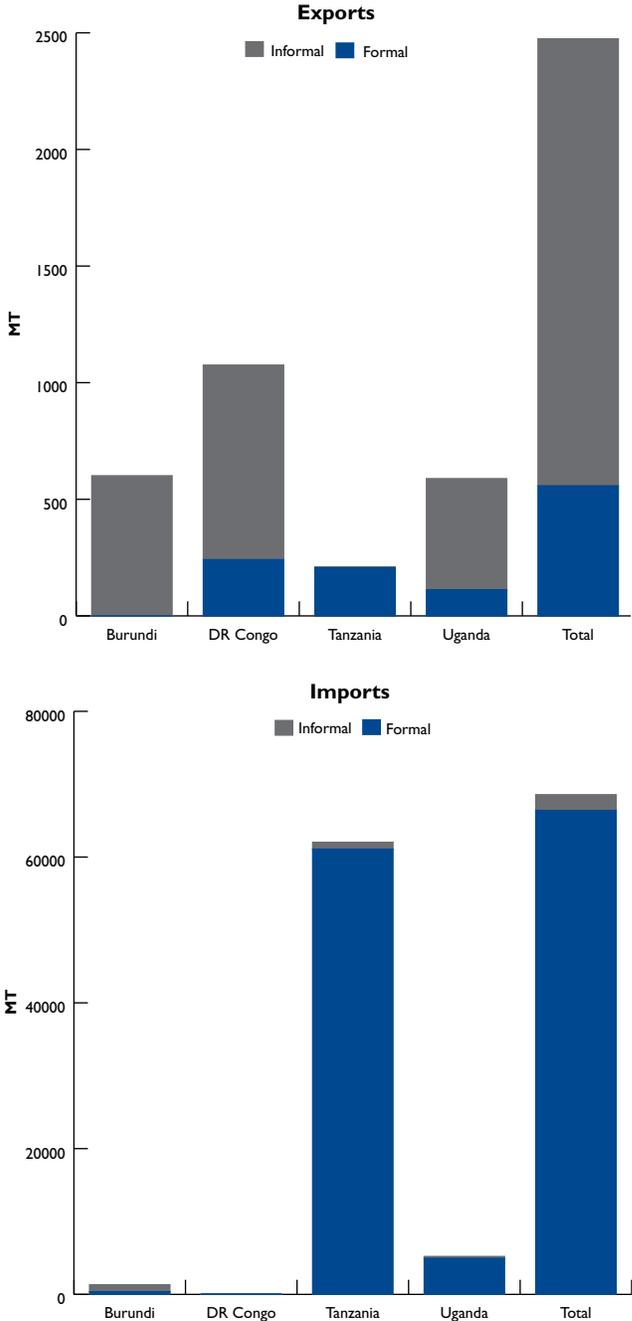
The small volumes of rice that are exported from Rwanda to Burundi, the DRC, and Uganda are mainly traded informally. Discussions with traders indicated that for Burundi and Uganda, most of this informal trade represents opportunistic exports that take advantage of localized market conditions. The DRC mostly consumes Asian rice, but it is possible that the country receives larger volumes that transit through Rwanda from other countries (especially Tanzania and Pakistan).

Overall, cross-border trade in rice can be characterized by the following:

1. Negligible trade in paddy rice.
2. The consistent importation of rice as grain from Tanzania and to a lesser extent Pakistan.
3. A domestic market for rice, comprising 68 percent local production, 12 percent imports from Pakistan, and 20 percent imports from Tanzania.
4. Very small volumes of exports, which show no discernible increase over time.

These characteristics are further developed below, by considering the key determinants of trade: price, processing, seasonality, and trader demographics.

FIGURE 31: FORMAL AND INFORMAL EXPORTS AND IMPORTS OF RICE, 2009–2012

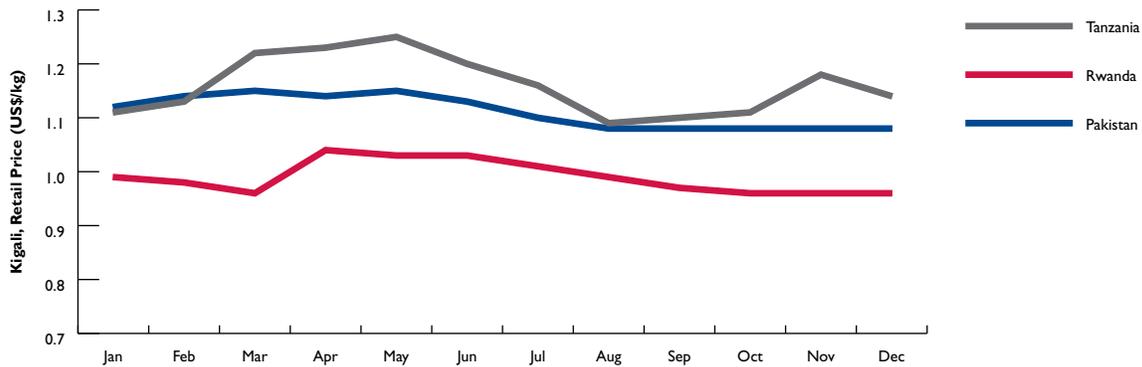


Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

Price

Imports of rice from Pakistan and Tanzania appear to be driven by quality demands. Pakistani rice is popular in Rwanda because of uniform grain size; rice from Tanzania holds a substantial niche market based on taste. The prices of rice from these countries are consistently 10–20 percent higher than the price of rice produced locally (Figure 32), reflecting the premium the market attaches to these qualities.

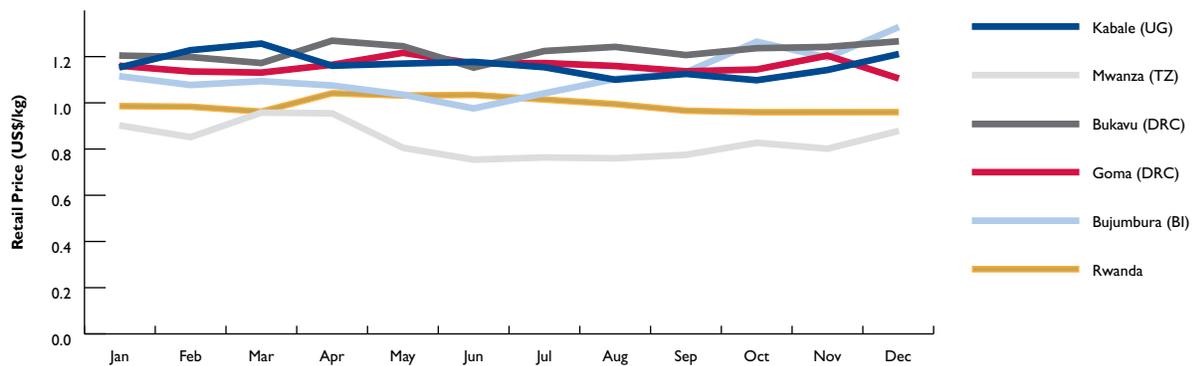
FIGURE 32: AVERAGE RETAIL PRICES IN KIGALI OF RICE FROM DIFFERENT SOURCES, 2010–2012



Source: Rwanda eSoko.

The relatively poor quality of Rwandan rice, the prices of locally produced rice in different cross-border markets largely determine the feasibility of export out of Rwanda. Figure 33 indicates clearly that Rwandan rice is unlikely to find a market within the Kagera region of Tanzania, where prices are consistently lowest. On the other hand, although margins are small, it may be possible to find occasional markets in the DRC and Uganda.

FIGURE 33: AVERAGE RETAIL PRICES IN DIFFERENT MARKETS OF LOCAL RICE 2010-2012



Source: FAO, InfoTrade Uganda, Rwanda eSoko, WFP

Opportunities for export into Burundi are limited during the first half of the year, when markets in both Burundi and Rwanda absorb the Season A harvest. Later in the year, prices in Bujumbura rise by 20 percent, but by that time, Rwanda has less local rice available. Increased productivity in the future could allow this market to be tapped.

Processing

Rwanda has excess processing capacity of varying types, ranging from large commercial units capable of high throughput and good output, to low-efficiency village units. Regardless of quality, most mills operate at a price of RWF15/kg of paddy milled. Processing efficiency affects post-harvest losses of rice and production costs. Milling output can be affected by the variety of rice and the condition and management of the mill. Traders report that levels of output from the smaller village mills in Rwanda have been very low (below 50 percent), although the recently introduced regulations requiring cooperatives to sell and distribute rice are likely to reduce the number of smaller mills. Nevertheless, harvesting during rainy conditions, lack of drying facilities, and even the use of poor quality bags, has resulted in post-harvest losses of up to 26 percent. The impact of such losses has been well recognized and programs are being designed to address these problems.⁸⁴

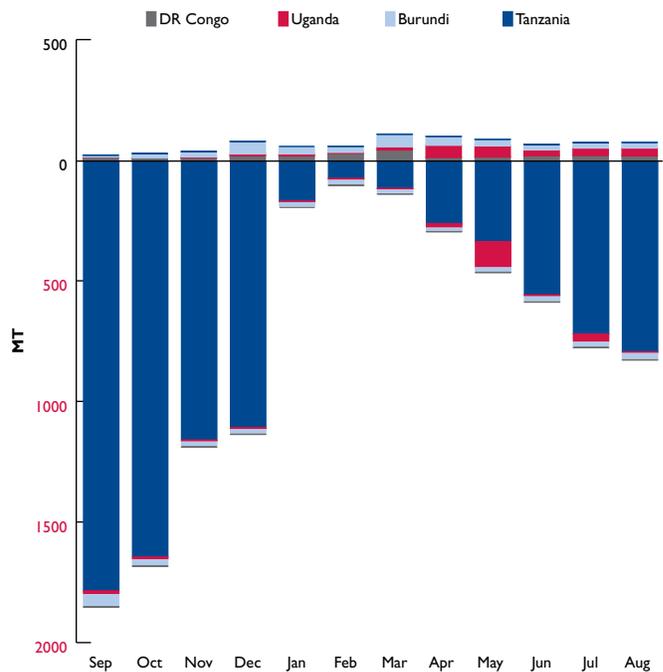
Seasonality

The impact of seasonality on cross-border trade flows of rice is evident in Figure 34. Import flows are minimal immediately following the local harvest of Season A, but increase consistently from March through September. In Tanzania, rice is harvested in May so that peak market availability is from and after June. Nevertheless, peak imports from Tanzania occur later, i.e. in September and October, and remain high through December; this suggests the primary driver of import volume is not supply from Tanzania, but the level of demand in Rwanda.

Trader Demographics

The bulk of cross-border trade in rice is conducted by distributors within Rwanda, who import from Tanzanian merchants or agents of Pakistani merchants based in Tanzania or Kenya. Smaller traders have tended to dominate the domestic market, but have played a limited role in the cross-border trade of rice, due to the largely formal nature of imports and the low levels of exports. Domestic trade has been characterized as disorganized, opportunistic, and exploitative, and there is little reason to expect export trade to be any different. However, it is anticipated that the newly introduced regulations on cooperatives will substantially change the nature of the trading sector (for both domestic and export markets), limiting the role of smaller players in the market and possibly leading to greater formalization of exports.

FIGURE 34: MONTHLY TRADE FLOWS OF RICE, 2011–2012.



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

⁸⁴ Including USAID'S Post-Harvest Handling and Storage Project.

Conclusions

Analysis of the trade and price data for rice suggests the following:

1. The importation of rice into Rwanda reflects a shortfall in supply relative to demand. Imported rice is generally more expensive and hence there is real potential for import substitution through increased local supply.
2. Rice yields in Rwanda are already high. The potential for further increases will be limited. The most cost-effective pathways to increased supply are (a) increased efficiency of milling, (b) reduction of post-harvest losses, and (c) the further development (where possible) of the land available for rice.
3. Post-harvest losses of rice are generally estimated at 13 percent. This figure suggests that the potential exists to increase domestic supply through reduced post-harvest loss.
4. The export of rice out of Rwanda is as yet only occasional and driven more by short-term variations in price than by any substantive advantage benefitting rice producers in Rwanda.
5. There is a limited niche market for rice with strong aroma and taste (produced from low-yielding varieties in Tanzania).

Recommendations

1. There is only a limited economic advantage in producing rice with strong aroma and taste that would compete with Tanzanian imports. These varieties produce less than one-third of the yields currently achieved in Rwanda. Given the limited land available for producing rice, it is recommended that production continue to be based on modern, high-yielding varieties rather than shifting to higher-quality but lower-yielding varieties.
2. The primary thrust of development in the rice sector should be to achieve self-sufficiency in basic rice of good quality, which would effectively exclude Pakistani rice from the market. Improvements in post-harvest handling and storage will be most critical in achieving this goal.
3. It is difficult to discern a comparative advantage for Rwanda in the export of rice to its neighboring countries, especially given the advantage of extensive production enjoyed by Tanzania. Nevertheless, because of periodic government export bans, the trade out of Tanzania is inconsistent and the potential to develop a competitive—as opposed to comparative—advantage, especially through consistency of supply, remains a real possibility to be investigated once import substitution has been achieved.

CASSAVA

Overview

Cassava has always been a significant staple crop in Rwanda, but only recently has attention been focused on its increased production. MINAGRI statistics show that production has increased substantially since 2008 (Figure 35). This increase has been driven by an increased emphasis on cassava as a CIP crop that can contribute to both human and animal feed requirements.

To encourage production, milling capacity has been enhanced, new extension services developed, and the use of crop inputs has been encouraged. Nevertheless, although cassava is a resilient crop to grow, it can be subject to a number of post-harvest problems, including cyanogenesis,⁸⁵ rapid physiological degeneration, and both bacterial and fungal decay. These issues limit the tradability of raw and even milled cassava, which must be properly processed soon after harvest if it is to be sold in an international market. For these reasons, cross border trade in cassava currently represents only a very small proportion of local production and consumption. Nevertheless, the prices of cassava and cassava flour in neighboring countries, especially Burundi, suggest that increased exports might be commercially feasible if these constraints could be overcome.

Production

Cassava is grown widely throughout the country, although 45 percent of production occurs in Southern Province. Cassava can be harvested all year round, but MINAGRI records two standard harvests, with harvesting concentrated during the drier months. This is because any cassava destined for the market must be dried to 12.5 percent moisture content or less to prevent spoilage.

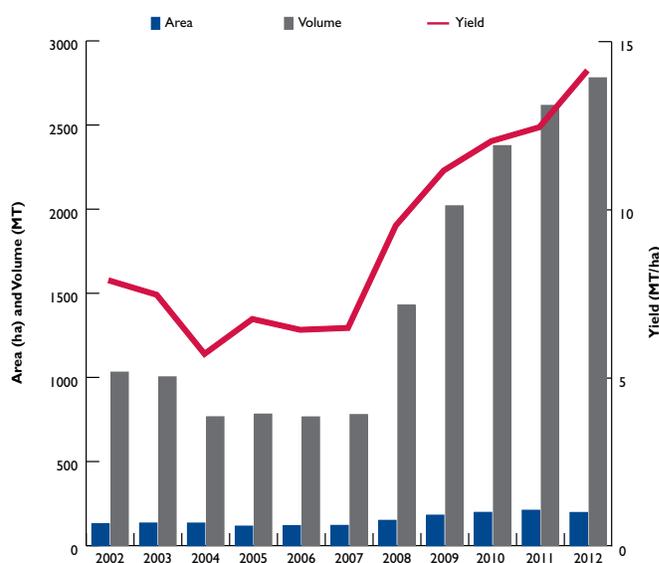
Yields of fresh cassava have reached 15MT/ha (75 percent of MINAGRI target), and production areas have also increased. As a result, production volumes are now more than 2.5 times their pre-2008 levels. The estimated volume of 2.75 million MT produced in 2012 is equivalent to 900,000 MT of dried cassava.

Consumption

Cassava is used to feed both humans (as starch, flour, and chips) and livestock. There are no reliable estimates of the extent to which cassava is used as livestock feed, although the disparity between production and human consumption statistics suggests that this volume might be considerable. The latest EICV3 consumption survey estimated that for 2010/2011:

- » The value of domestic consumption of cassava was RWF24.4 billion.⁸⁶ This total value, based on an average retail price of RWF170/kg, implies a national consumption volume of 143,500 MT.
- » The value of domestic consumption of cassava flour was RWF40.5 billion. This total value, based on an average flour price of RWF215/kg, implies a national consumption of 189,100 MT.

FIGURE 35: TRENDS IN AREA, VOLUME, AND YIELD OF CASSAVA PRODUCTION, 2002–2012



Source: MINAGRI 2002–2011; estimate used for 2012.

⁸⁵ The generation of cyanide.

⁸⁶ National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011.

Factoring in additional volumes required for livestock feed⁸⁷ and storage losses, domestic cassava utilization could be estimated at close to 500,000 MT (Table 3).

This 500,000 MT utilization estimate is significantly lower than MINAGRI's assessment of 2011 production for both harvests, which reported more than 2.5 million MT of fresh cassava, equivalent to 840,000 MT of dry cassava. This disparity suggests that either demand is higher than recorded, or production is less.

Marketing

EICV3 data shows that 135,000 MT of dry cassava reaches the consumer through formal or informal markets (equivalent to annual per capita consumption of 12 kg). This low per capita total

suggests on the one hand that much of the cassava produced is utilized directly for own consumption, and on the other, that the value chain of processing and marketing required to deliver an unspoiled product to the consumer has yet to be effectively developed. In order to minimize post-harvest spoilage, cassava should not be harvested until it can be dried, processed, and sold into the market within a period of less than a week. This requires ready access to drying and milling facilities, as well as to a recognized network of traders willing and able to buy the dried cassava. Until recently, farmers producing cassava were not well-served with either processing capacity or market linkages.

Anecdotally, small opportunity traders have typically purchased the cassava crop when they had the money to do so. Farmers who had already harvested, and were worried about post-harvest spoilage, felt compelled to sell at a low price.

Both of these aspects are now being addressed. A new mill is operating at Kinazi; this will (1) enhance processing capacity and (2) provide a wider market for growers who can harvest cassava with the confidence that once dried it can be promptly sold.

Cross-Border Trade

The trade data shows that over the last four years, Rwanda has been a net importer of cassava and a net exporter of cassava flour (Figure 36), although the volumes traded are small. Total imports over the last four years (19,441 MT) were less than 1 percent of human consumption, and total exports (11,202 MT) were only 1.5 percent.

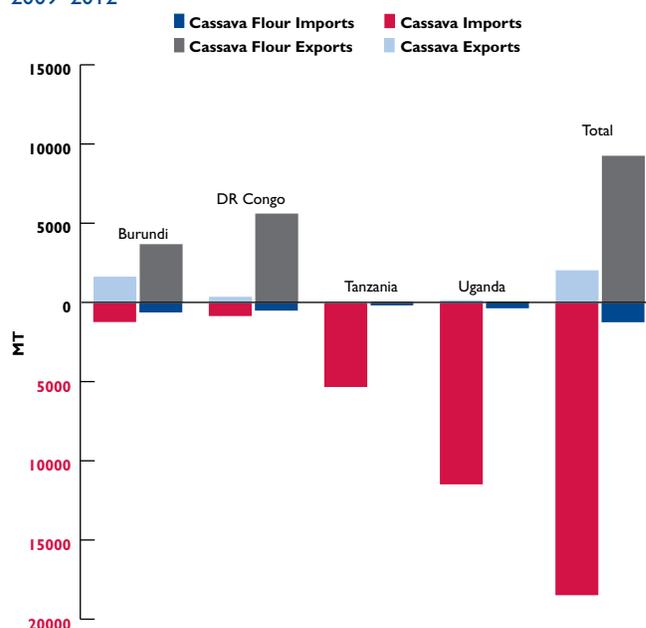
The bulk of cassava imported into Rwanda has entered from Uganda (59 percent); 27 percent has come from Tanzania and less than 4 percent from Burundi and the DRC. Of the total imports, only 5.9 percent was imported as flour. By contrast, Rwanda has mainly exported cassava flour, which constituted

TABLE 3: ESTIMATED UTILIZATION OF CASSAVA

		VALUE (RWF MILLIONS)	VOLUME (MT)
Cassava flour consumption	Urban	7730	32900
Cassava flour consumption	Rural	32800	156200
Cassava dry root consumption	Rural	24400	143500
Estimated livestock feed			40000
Post-harvest Losses (25%)			124200
Total Utilization			496800

Sources: EICV3; MINAGRI; FAO.

FIGURE 36: TOTAL CROSS-BORDER CASSAVA TRADE, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

⁸⁷ This figure is an estimate only.

82 percent of all cassava exports during 2009–2012. The main destination for exported cassava from Rwanda has been the DRC, which received 52 percent of all cassava exports, 95 percent of which was flour. Burundi received 46 percent of all cassava exports, of which only 60 percent was flour.

The type of cross-border trade in cassava has varied according to the direction of trade and the trading partner: Most cassava and cassava flour entering Rwanda has been formally imported with less than 10 percent entering through informal channels. Conversely, 94 percent of all exports have been through informal channels. In terms of trading partners, the DRC has shown the highest level of informality, with 97 percent of all trade occurring informally.

Cassava and cassava flour are occasionally exported from Rwanda through both formal and informal channels into Burundi and Uganda. During the last four years there has been no record of any exports entering Tanzania. This cross-border trade is similar to the opportunistic trade in maize, beans, and most other commodities—they occur more in response to local pressures (similar to domestic trade) than to substantive national differences.

Overall, cross-border trade in cassava can be characterized by:

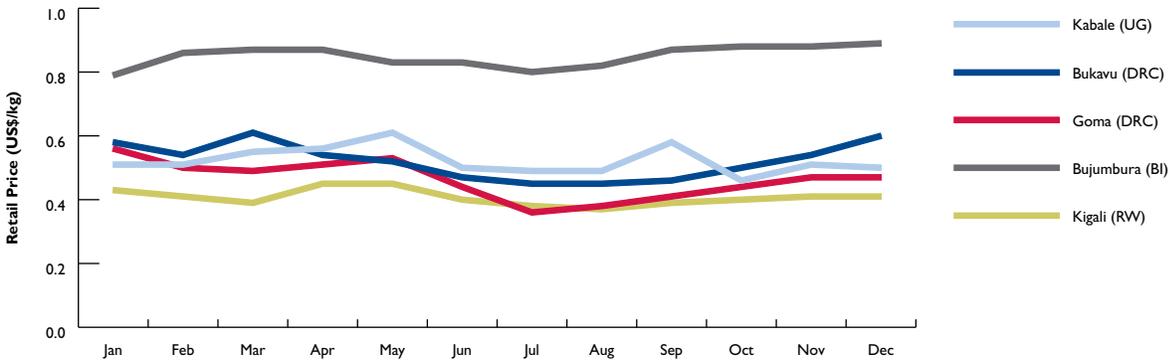
1. Limited but consistent importation of cassava from Uganda and to a lesser extent, Tanzania.
2. Growing volumes of exports of cassava meal, largely to DRC, but also to Burundi.
3. Sporadic export of small volumes of cassava to and from Burundi and Uganda, but never to Tanzania.
4. Volumes of trade that represent almost negligible proportions of estimated consumption.

These characteristics are further developed below, by considering the key determinants of trade: price, processing, seasonality, and trader demographics.

Price

Over the last three years, the average retail price of cassava flour in Kigali has remained relatively constant throughout the year: Prices in Kigali have been lower than prices in Bukavu and Kabale, and substantially lower than prices in Bujumbura (where cassava is considered the primary staple crop). Only in Goma have prices dropped to the levels in Kigali, and then only in July.

FIGURE 37: AVERAGE RETAIL PRICES OF CASSAVA FLOUR, 2010–2012



Sources: FAO; InfoTrade Uganda; Rwanda eSoko; WFP.

This price data suggests that there should be ready markets for Rwandan cassava flour primarily in Bujumbura (where the margin is of the order of 100 percent) and to a lesser extent Bukavu. Even into Uganda, it appears feasible to export cassava flour for sale in Kabale, although margins have rarely exceeded 20 percent.

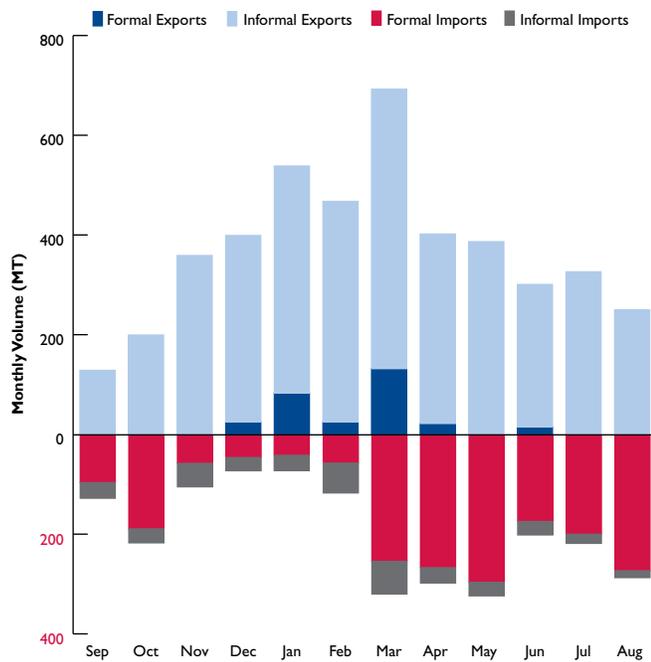
Processing

Although cassava flour is efficiently produced in both Uganda and Tanzania, the levels of flour imports into Rwanda from these two countries are much lower than the imports of cassava itself. Even though it might be considered more cost effective to mill cassava in Uganda or Tanzania, most cassava enters Rwanda as dry cassava and is milled within the country. Conversely, Rwandan exports consist almost entirely of cassava flour; not dry cassava. The reason for this apparent disparity is that cassava flour in Rwanda is produced by a range of large and small hammer mills, working at low capacity and (in rural areas) with low labor costs, so that the flour can be produced at a competitive price, and even exported back into Uganda if distribution costs can be minimized.

Seasonality

The fact that the retail price of cassava flour in Kigali has remained approximately constant throughout the year suggests that any seasonal fluctuations in trade should be due to demand rather than supply factors. The last two years have shown a marked seasonality of cassava flour exports, with a significant peak between January and March (Figure 38).

FIGURE 38: MONTHLY TRADE FLOWS OF CASSAVA AND CASSAVA FLOUR, 2011–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

This seasonal pattern reflects the availability of domestically produced cassava in the Bukavu and Bujumbura markets, which is highest in September/October and lowest in February-March. The relative consistency of Rwandan cassava production allows Rwandan exports to take advantage of this opportunity.

Trader Demographics

In the past, domestic cassava trade in Rwanda was dominated by a multitude of small traders who worked with small millers in a relatively opportunistic and disorganized manner. The limited cross-border trade appears to have been conducted in the same way. However, this situation is being increasingly streamlined and rationalized as larger mills are constructed and clearer marketing channels become available for growers. As a result, it can be expected that trader demographics will also change over time. In particular, the Burundi market has in the past been serviced by informal traders from border areas in Burundi who have entered Rwanda and purchased cassava flour directly from small mills, returning by bicycle to sell their flour (and occasionally dry cassava). It can be expected that this situation will change if Rwandan traders are able to take advantage of the economies of scale that are becoming increasingly available in their local markets.

By contrast, trade into the DRC, although profitable, will continue to be dominated by informal women traders from Rwanda who are best able to negotiate the current informal import regime.

Conclusions

Analysis of the trade and price data for cassava and cassava flour suggests the following:

1. Substantial differences exist between current datasets for consumption and production of cassava, which limit the value of conclusions that can be drawn. In particular, levels of spoilage and animal feed remain unknown and could be significant.
2. Rwanda is a net importer of cassava at present but will rapidly become self-sufficient if current trends continue. The existing trade deficit is in any case negligible.
3. Rwanda appears to enjoy an advantage in the domestic production of cassava flour. The reasons for this are unclear, but may be associated with the lower costs of village-level production.
4. The market for Rwandan cassava flour extends into Bukavu, but not Goma. It is even possible to export cassava flour to Kabale, but profit margins may be slim.
5. By contrast, a significant margin exists between retail prices in Kigali and Bujumbura which suggests that the Burundi market is the most suitable for development. This market has been serviced informally in the past.
6. Overall, the market for cassava flour from Rwanda appears significantly underdeveloped. If it were possible to develop market linkages that would allow the constant flow of economic volumes of cassava flour to end markets in Burundi and the DRC, then trade in cassava flour could be significantly increased.

Recommendations

1. The potential to increase exports of cassava out of Rwanda is limited by the perishability of the product. Nevertheless, marginal increases in import substitution are possible. Given the dramatic increase in productivity that has been achieved to date, it now appears reasonable to expect further gains from improved post-harvest handling and processing, especially the drying of fresh cassava and the production of garri.
2. Cassava flour produced in Rwanda is competitively priced within the region and can be exported to a number of countries, especially Burundi. Previous export markets have tended to be small and informal, limited mainly to adjacent areas on the border so that market linkages were weak. The efficient growth of larger export markets, especially into Burundi, will require the development of robust trader networks that allow for improved communication, price discovery, and performance. It is recommended that interventions should address the creation of an enabling environment for trade, including providing export finance, improved market information systems (which are not easily accessible in Burundi), and mechanisms to resolve contract disputes on both sides of the border.

DAIRY PRODUCTS

Overview

Rwanda's dairy sector has grown rapidly over the last five years. This has been achieved through the support of GoR, which has provided genetically improved dairy cows⁸⁸ and enhanced the structure of the value chain by developing milk collection centers (MCCs).

The dairy sector has nutritional, as well as income-generating, significance. While per capita milk consumption has increased more than three-fold in the last five years, production has increased at an even greater rate. In fact, the most recent consumer survey reported 52,000 MT annual surplus of milk production, which is projected to increase to 335,000 MT by 2020.⁸⁹ From this perspective, it is important to develop new markets for dairy products if the sector is to remain viable. This assessment suggests that such markets do exist, especially in Burundi, where processed milk products from Rwanda can command a premium price based upon quality and branding.

Production

According to the draft National Dairy Strategy, Rwanda has an estimated 1.33 million cattle. The majority are local Ankole cattle (72 percent); the remainder are crossbred (20 percent) and purebred (8 percent) dairy types. Milk production is estimated at 1.2 million liters per day or 438,000 MT per year; with 82 percent of production from improved dairy cows. Further improvement in the productivity of these animals (through improved nutrition, fertility, and health) and the continued expansion of the improved dairy herd (through importation or artificial insemination) is anticipated to drive supply. As of 2011, the number of improved cows was estimated at 133,000, each producing roughly 8 liters of milk per day. The national strategy to increase this number to 350,000 will of itself increase milk production levels by a factor of 2.5.

Three types of dairy systems are operated in the five milk sheds of Rwanda (Figure 39). Extensively grazed animals produce low yields in the dry north/northeast. Intensive zero grazing is practiced around Kigali, in the north and in the northwest, where higher-yielding animals must compete with intensive cash cropping. Semi intensive-systems incorporating both zero grazing and some animals at pasture are also used in the north, northwest, and more extensively in the south.

Overall, milk production in Rwanda is inherently expensive. Producer prices generally range from US\$0.23 to US\$0.28 per liter; although in the absence of a market, milk prices can fall as low as US\$0.16 per liter.⁹⁰

Consumption

Annual milk consumption has increased from 12 liters per capita in 2007 to 40 liters per capita in 2012.⁹¹ A value chain study⁹² estimated that of this, 50 percent is either consumed at home or lost to waste, 46 percent is marketed informally, and the balance of 4 percent is marketed through formal channels.

⁸⁸ Friesians, jerseys, or cross-breeds have been distributed through the "one cow, one household" program.

⁸⁹ Rwanda National Dairy Consumer Survey Analysis and Marketing Strategy, Recommendations Workshop: Workshop Report (May 2012).

⁹⁰ US national average producer price for July 2009 was estimated by the Journal Progressive Dairyman at US\$0.226 per liter.

⁹¹ Ministry of Agriculture and Animal Resources (MINAGRI), National Dairy Strategy (draft), 2012.

⁹² East Africa Dairy Development, The Dairy Value Chain in Rwanda (October 2008).

Cross-Border Trade

The cross-border trade data for milk shows that over the last two years Rwanda has been a net exporter of the commodity (Figure 39), supplying about 5,000 MT per year, mainly to the DRC, but also to Burundi. These exports represent only 1 percent of total production, but 30 percent of the estimated formal market.

Imports are even smaller at 1,000 MT per year, and sourced almost exclusively from Uganda. As Figure 40 shows, almost all of the milk imported from Uganda enters through formal channels and almost all the milk exported to Burundi and especially the DRC is informally exported.

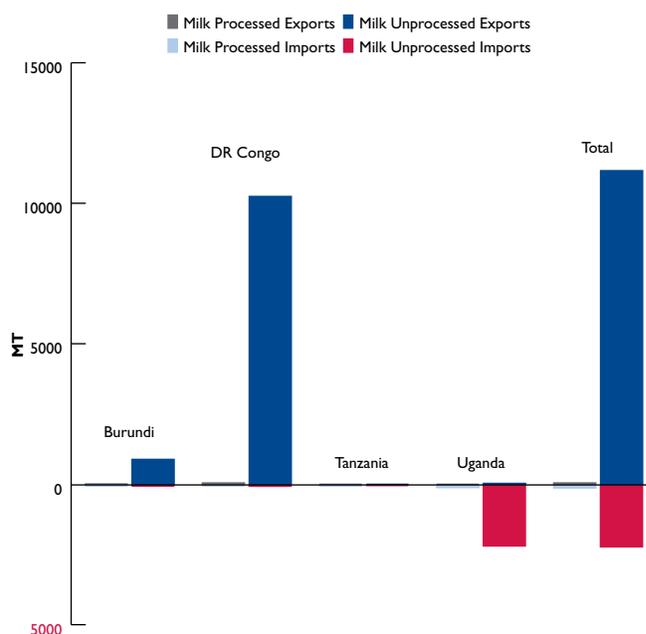
Although much of the milk entering the DRC is informally traded, a significant proportion is nevertheless formally processed into UHT. Because the formal trade of milk across the DRC border would incur excessive costs in *tracasserie*, processors prefer to sell their milk into markets close to the border where it is purchased by informal traders and transported in small volumes into the Goma and Bukavu markets. This preference contrasts with the informal export of milk into Burundi, which is conducted by Burundian traders on bicycles who cross the Rwanda border with jerry cans, buy small volumes of milk directly from farmers, and return to sell it in local Burundi markets.

Overall, cross-border trade in milk can be characterized by:

1. Small amounts of milk imported from Uganda, due to the low costs of production in that country.
2. Exports into the DRC and to a much lesser extent, Burundi.
3. A marked contrast between formal imports and informal exports.

These characteristics are further developed below, by considering the key determinants of trade: price, processing, seasonality, and trader demographics.

FIGURE 39: CROSS-BORDER TRADE IN FRESH AND PROCESSED MILK, 2011–2012

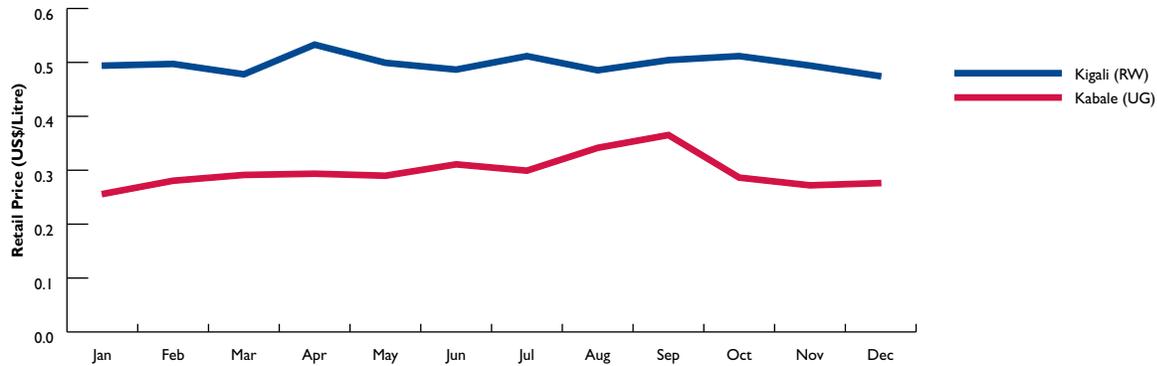


Sources: National Bank of Rwanda; Rwanda Revenue Authority.

Price

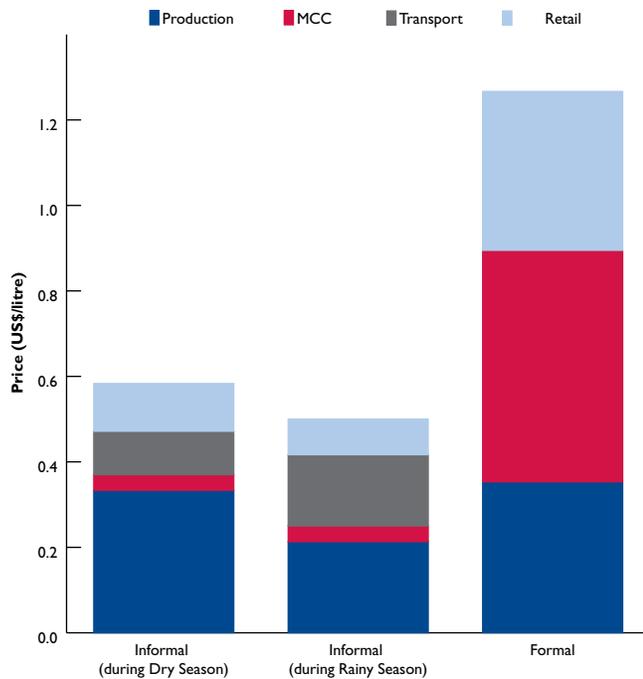
Milk produced in Rwanda is comparatively expensive. Figure 40 shows the costs of fresh milk in Kigali and in Kabale, Uganda. Because Ugandan milk is produced under more extensive conditions, it is consistently substantially cheaper.

FIGURE 40: AVERAGE RETAIL PRICES OF MILK IN KIGALI AND KABALE, 2010-2012



Source: InfoTrade Uganda, Rwanda eSoko

FIGURE 41: COMPONENTS OF THE MILK VALUE CHAIN



Source: East Africa Dairy Development

The cost of Rwandan milk is doubled if processed through formal channels, mainly because of higher payments to collection centers (Figure 41). The increase in cost explains why most export trade out of Rwanda is informal. The advantage in maintaining an informal cost structure and bypassing the milk collection centers is so great that it justifies the additional expense involved in transporting small volumes. Indeed, one small trader reported that he would regularly fill jerry cans with fresh milk bought from farmers, transport it to Bujumbura by bus, and sell it directly to retailers himself.

Because of the price advantage of Ugandan milk production, it is difficult for Rwandan milk to penetrate those formal markets where it competes with Ugandan milk. Nevertheless, Uganda does not export milk informally and this protects much of the Rwandan domestic market from Ugandan exports. Where the export of raw or semi-fermented milk in jerry cans does occur (such as into Burundi and the DRC), Rwandan milk enjoys a competitive advantage due to its proximity to these markets. These markets seem substantial and when introducing grades and standards to the dairy sector, care should be taken to avoid contracting these outlets.

Processing

Milk can be processed as Ultra High Temperature (UHT), cream, butter, or cheese. These products all have a greater shelf life than raw milk, but all are more expensive to produce and are restricted to a smaller market (albeit of higher income consumers) than raw milk. Nevertheless, processed dairy products represent a conduit for Rwanda's dairy sector to add value and expand market opportunities, provided effective packaging and branding is developed to secure specific market niches. On this point, an investigation of the markets in neighboring countries found significant market penetration by Rwandan processed dairy products, especially Inyange UHT milk and cheese produced by two different factories.

UHT Milk

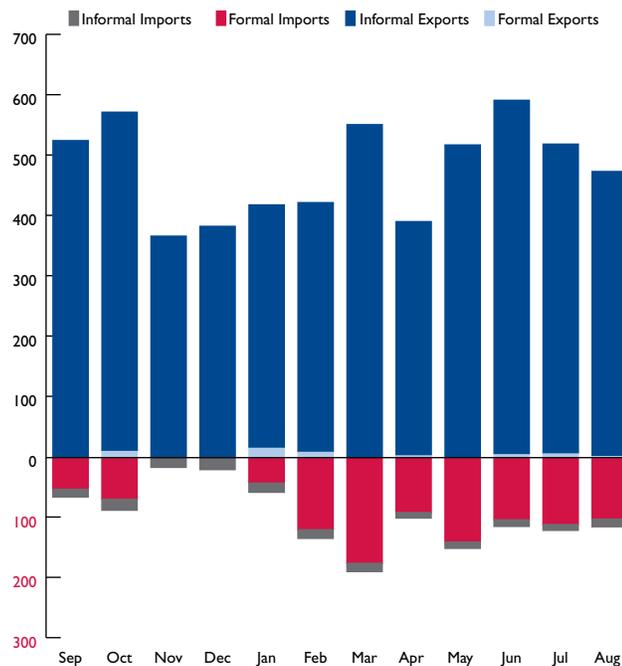
Rwandan UHT milk packaged and branded to a quality similar to that of the Ugandan competition was found in both small kiosks and supermarkets in the DRC, Uganda, and Burundi, but not Tanzania. The price of the Rwandan product was significantly higher than that of other UHT milk (e.g. in Mbarara, Rwandan UHT sold for US\$2.08 per liter, while the Ugandan equivalent beside it was US\$1.48. In Bujumbura, Rwandan UHT sold wholesale for US\$1.72/liter and retailed at US\$2.27/liter, while Ugandan UHT cost US\$1.09 per liter and retailed at US\$1.38/liter. In all cases, however, the Rwandan product continued to sell, despite its higher price. The Rwandan brands have developed a niche based upon quality and taste.

Cheese

Cheese produced in Rwanda is being sold as far west as Brazzaville and Kinshasa and in a number of outlets in Burundi. In Bujumbura, it competes with cheese from the DRC and with local production. Locally produced cheese sold for US\$0.86/100gm, while that from the DRC fetched US\$1.10/100gm and cheese from Rwanda was priced at US\$1.24–1.34/100gm.⁹³ Similarly to UHT, cheese produced in Rwanda is able to command a premium price in the market, based upon both taste and a perceived premium quality, despite the availability of cheaper cheese from other sources.

It is significant that in both cases, sales were limited by the supply of the products. There is only one importer of Rwandan UHT milk in Burundi and retail outlets cannot guarantee a constant supply. Similarly, cheese importers complained that it was sometimes difficult to buy Rwandan cheese from the factories. Such inconsistency of supply weakens brand loyalty and hinders market development.

FIGURE 42: MONTHLY TRADE FLOWS OF MILK, 2011-2012.



Source: National Bank of Rwanda, Rwanda Revenue Authority, UN Comtrade

Seasonality

Seasonality does not appear to play a clear role in the cross-border trade of milk. Although farm-gate prices fluctuate according to the amount of raw milk on the market, neither retail prices (Figure 42) nor monthly trade flows (Figure 43) reflect this variation to any great degree. Average monthly data shows some increase in volumes of imported milk during the drier months of February, March, and April, but it is difficult to discern any other trends that might be linked to levels of production.

Trader Demographics

The bulk of cross-border trade in milk is carried out by informal traders who buy either from formal outlets or directly from producers. In the case of trade into the DRC, Rwandan women purchase small volumes from formal outlets for sale to retail outlets in the DRC. Trade into Burundi appears to be carried out by Burundi nationals who enter Rwanda to buy milk or cheese and return to Burundi by bicycle or bus. While formal exports into the DRC are constrained by *tracasserie*, the lack of a formal trade network into Burundi is limiting the development of that market for processed dairy products.

⁹³ Local traders indicated that the wholesale price of Rwandan cheese was US\$3.90/kg in Rwanda and that the cost of transport would be expected to be no more than \$0.15/kg, so that the total cost per kg need be no more than US\$4.05/kg or \$0.405/100 gm.

Conclusions

Analysis of the trade and price data for dairy products suggests the following:

1. Given the increasing surplus of production over demand, it is essential to develop both domestic and export markets for Rwanda's dairy products.
2. Uganda is the sole source of small amounts of milk (largely UHT) imported into Rwanda, due to Uganda's low production costs.
3. Costs of milk production in Rwanda are higher than in Uganda and the costs of processing exacerbate this difference. For this reason, although informal milk production can compete with Ugandan product in select markets, formal milk markets are vulnerable to competition.
4. Nevertheless, brand loyalty has enabled the development of niche markets for UHT milk and cheeses, domestically and in Burundi and the DRC.
5. Informally traded milk can capitalize on price sensitive low-income markets in Burundi and the DRC, while formally traded milk can expand its niche markets in the higher income urban areas of those countries.
6. Developing trade networks to ensure consistent supply of processed dairy products to retail outlets will help to grow Rwandan exports. **Anecdotal evidence suggests that a potential increase of 100 percent or more is feasible given adequate attention to marketing.**

Recommendations

1. While Ugandan UHT milk is the market leader in the region, Rwandan product can compete if it can maintain and develop brand loyalty. To that end, stringent standards need to be put in place to ensure the quality of the product throughout the value chain. This requires the development of a trading network that will respect sell-by dates and dispose of old stocks appropriately.
2. Rwandan cheese has a market in Burundi that is based on quality rather than price. As new varieties of cheese are produced, it will be important to develop industry standards that can sustain that market niche and for the private sector to develop ways to enforce those standards.
3. For Rwandan processed dairy products, market development is currently constrained by inconsistent availability of product in the marketplace. Strengthening a regular supply chain to ensure consistent supply should be considered more important than becoming cost-competitive.
4. By contrast, Rwanda has neighboring markets for the sale of low-cost, informally traded raw or semi-fermented milk which cannot be supplied by Uganda. These markets appear substantial and care should be taken when imposing grades and standards on the dairy sector to avoid the contraction of these outlets.

LIVESTOCK

Overview

Livestock has always been a key component of the Rwandan agricultural sector, and the livestock population has been consistently increasing over the last ten years (Figure 43). The national goat herd in particular has surged, doubling since 2008. Nevertheless, when expressed in Tropical Livestock Units (TLUs),⁹⁴ which provide a more accurate representation of both metabolic demand (i.e. fodder requirements) and ultimately value, the national livestock herd is still dominated by cattle, and for that reason, this section focuses on cattle. This assessment indicates that while livestock exports represent a substantial proportion of domestic production, the potential for increased value added through improved processing and cold chain development is limited as much by constraints in neighboring markets as by factors within Rwanda.

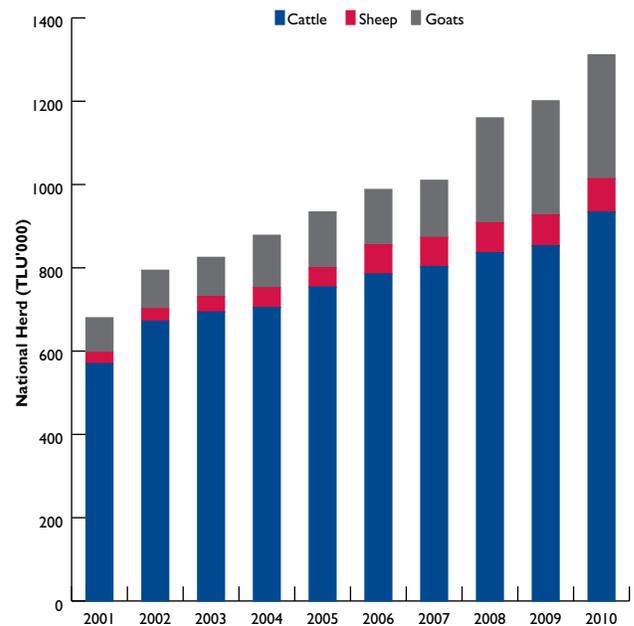
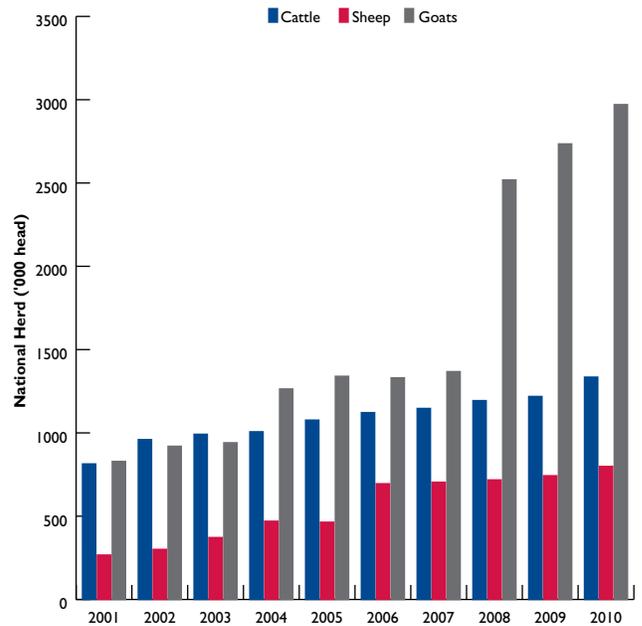
Production

Livestock production occurs throughout Rwanda, but more than 50 percent of production is concentrated in the northeast portion of the country, where cattle are raised on a traditional basis. Since 2007, national production has increased 30 percent to 1.3 million TLU. Increasingly, meat is being produced from the bull calves of the dairy sector; but this still constitutes only about 10 percent of all cattle in the country. Paradoxically, because these dairy breeds are less suited to meat production, the availability of beef overall has been falling. Accordingly, prices have increased significantly in the last 12 months, although export demand may be another factor affecting the price increase.

Consumption

In terms of expenditure, beef is prominent in the Rwandan diet, listed third in urban food expenditure at RWF 15,800 million (5.7 percent) and tenth in rural food purchases at RWF21,600 million (2.3 percent⁹⁵). In terms of volume, however, these figures correspond to only 10,500 MT and 14,400 MT for urban and rural populations respectively, indicating annual per capita consumption levels of 5 kg (urban) and 1.6 kg (rural).

FIGURE 43: TRENDS IN LIVESTOCK NUMBERS AND TLUS



Source: EAC Secretariat (www.eac.int/statistics/).

⁹⁴ The concept of Tropical Livestock Units (TLU) provides a convenient method for quantifying a wide range of different livestock types and sizes in a standardized manner. <http://www.fao.org/ag/againfo/programmes/en/lead/toolbox/Mixed1/TLU.htm>

⁹⁵ National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011

Marketing

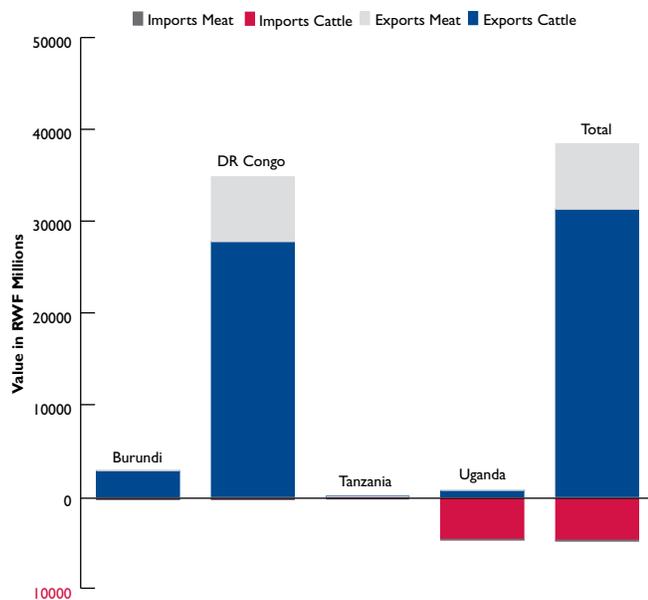
Meat produced by farmers is normally sold directly to butchers at rural markets. Animals sold in this way should theoretically be slaughtered through the 17 registered abattoirs in Rwanda. In practice, many animals are slaughtered informally (especially in rural areas—the practice is less common in towns). The meat is then displayed at butcheries and sold within a few hours of slaughter. Good steak meat will normally fetch a price 50 percent higher than lower quality cuts, but overall, the market is highly price sensitive and demand tends to be highest for the lower-priced cuts. This means that the price difference between the highest and lowest quality is generally lower than might be expected.

The cold chain within Rwanda is very limited. There is one modern abattoir in Kigali with cold storage facilities, capable of handling 160 head per day. Sixteen smaller abattoirs distributed about the country operate on basic level, producing fresh meat for immediate consumption. The construction of a modern abattoir is planned for Gatsibo in Eastern Province. Overall, there is scant national cold chain capacity and in particular, very few refrigerated vehicles for transporting meat. Little domestic movement of meat occurs once an animal has been slaughtered.

Cross-Border Trade

Trade data shows that over the last four years Rwanda has been a significant trader in livestock. While total domestic expenditure on meat in 2011 is estimated at RWF37,400 million,⁹⁶ the overall value of trade over the last four years averages RWF11,000 million, suggesting that on an annual basis the value of trade exceeds 25 percent of the domestic market value. This is in marked contrast to most other agricultural commodities (e.g. maize, beans, or cassava) where the value traded generally represents less than 5 percent of national consumption.

FIGURE 44: TOTAL CROSS-BORDER TRADE IN CATTLE AND MEAT, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

Rwanda has been a net exporter of both livestock and meat (Figure 44), although a striking feature of livestock trade is that live animals predominate (the reasons for this are explained in the “processing” subsection below). Imports have come almost exclusively from Uganda as live animals and constitute less than 12 percent of total trade. Exports have been predominantly to the DRC and have been made mainly in the form of live animals, although a significant proportion of meat (20 percent by value) has also been exported. There has also been a small but steady export of live animals to Burundi (some of which may be re-exported to the DRC), and even some small export volumes to Uganda. Trade with Tanzania has been negligible. It is evident that overall, the DRC has been the key market for livestock in the region.

The trade data shows that a considerable proportion of the livestock trade is formal in nature. While exports to Burundi are largely informal, formal exports of live animals to the DRC exceed informal exports. Similarly, imports of live animals from Uganda are predominately formal, although a small proportion of informal imports do occur. Trade in meat is almost exclusively informal.

⁹⁶ National Institute of Statistics of Rwanda, Third Integrated Household Living Conditions Survey (EICV3), 2011.

However, because cattle are mobile, so is the cattle trade. The available data does not cover the export of live animals at points beyond the recorded border crossings and therefore may underestimate the actual value of informal Rwandan livestock exports. The assessment team observed that much of the informal trade between Rwanda and the DRC occurs across Lake Kivu where animals are transported to the DRC in small boats rather than crossing at the border posts. This is not well-captured in the existing data. It was also reported by stakeholders that animals from Rwanda informally cross into Tanzania to take advantage of the grazing there. Some may cross back into Rwanda, but many are then sold in Tanzania or into Burundi for eventual export to the DRC.

The livestock market is thus characterized by:

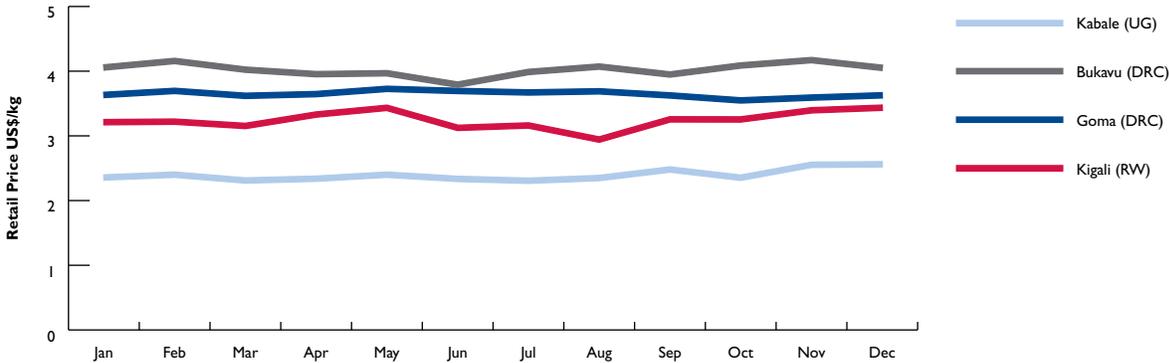
1. A substantial volume of cross-border trade, equivalent to 25 percent of the domestic market.
2. Regular importation of live animals from Uganda through formal channels.
3. Formal exports of live animals to the DRC.
4. Informal exports of live animals to the DRC and Burundi.
5. Informal exports of meat to the DRC
6. Negligible trade with Tanzania, imports from Burundi, or exports to Uganda.

These characteristics are further developed below, by considering the key determinants of trade: price, processing, seasonality, and trader demographics.

Price

Over the last three years, the average retail price of beef in Kigali has fluctuated between US\$3.0/kg and US\$3.5/kg, with no clear seasonality. Prices in Kigali have been consistently lower than prices in Bukavu and Goma, but substantially higher than prices in Kabale, Uganda.

FIGURE 45: AVERAGE RETAIL PRICES OF BEEF, 2010–2012



Sources: FAO; InfoTrade Uganda; Rwanda eSoko; WFP.

These prices reflect the lower costs of beef production in Uganda, where extensive grazing is readily available. They also reflect the continual demand for meat in the DRC. It is notable that prices in Bukavu are consistently higher than prices in Goma. Traders in Musanze indicated that this was due to the availability of Ugandan cattle, which could be informally imported across the relatively porous border into Goma. Even so, the prices remained high enough to justify the export of animals into Goma, especially given the additional profit that can be made from the animal if it is slaughtered in the DRC.

Processing

Interviews with stakeholders indicated that processing costs and the sale of by-products from processing in Rwanda significantly impact cross-border trade. Recognized official abattoirs are invariably more expensive than informal “bush abattoirs”, whether in Rwanda, Burundi, or the DRC. Therefore, traders prefer importing live animals for slaughter over importing meat—unless the animal is informally slaughtered in Rwanda. The interviewed stakeholders also emphasized that nothing is wasted from animals slaughtered in the DRC,⁹⁷ so the added value of local processing further drives the trade towards live cattle imports. For Rwanda, this practice impedes domestic employment and eliminates the loss of opportunities for value addition in Rwanda.

Another limiting aspect of processing is the absence of well-developed cold chain facilities within Rwanda. On other hand, this lack also applies to the DRC—the main export market. Therefore, even if the investments were made to expand cold chain capacity within Rwanda, a DRC buyer would still have to dispose of Rwanda’s hygienically processed meat within 12 hours after receiving it. Live animals do not pose this problem. Accordingly, there is little guarantee that improving Rwanda’s cold chain capacity would significantly increase the export demand for meat.

Seasonality

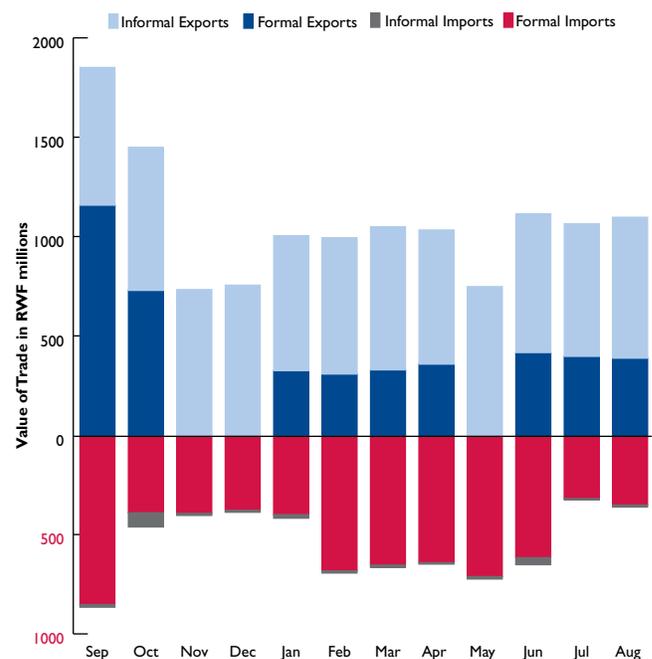
There are no marked seasonal trends to trade in livestock. Given the use of livestock as a form of bank, it might be expected that sales would be highest when household cash reserves were lowest (i.e. immediately before harvest), or when grazing was limited (i.e. just after harvest). However, the available data does not support either hypothesis. Therefore, it cannot be definitively ascertained whether, and to what extent, seasonality impacts the livestock trade.

Trader Demographics

Rwanda’s livestock export trade consists of three components: (1) informal exports of meat, (2) informal exports of live animals, and (3) formal exports of live animals. Each component is dominated by a different demographic:

- » Informal exports of meat are mostly conducted by small Rwandan traders operating on a daily basis. They purchase meat from butchers in Rwanda and carry it across the DRC border in small volumes (up to 50kg) for sale to retail outlets in Goma and Bukavu.
- » Informal trade in live animals is conducted by traders from the DRC, who come across Lake Kivu by boat to purchase animals from small markets held regularly in Rwanda, at various sites close to the shore. Animals purchased are then transported back to the DRC by boat.
- » Formal trade in live animals appears to be dominated by larger-scale businessmen, who typically load about 25 animals onto a truck and then take them into the DRC.

FIGURE 46: MONTHLY TRADE FLOWS OF CATTLE AND MEAT, 2011–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

⁹⁷ Even the rumen contents of cattle can be sold for a small profit, while the stomach and intestines, blood, skin, hooves, and other pieces all find a ready market.

Conclusions

Analysis of the trade and price data for cattle and beef suggests the following:

1. The characteristics of the livestock export sector (especially its informality and reliance on live animal exports) are shaped mainly by the nature of its biggest market—the DRC. Therefore, Rwanda's potential for increased exports depends more on developments within the DRC market than upon any other factors.
2. The potential to increase Rwanda's meat exports is limited by the perishability of product within the DRC. While investments in cold chain development will be necessary to achieve increased meat exports in the long term, such investments must be accompanied by parallel investments within the DRC if they are to be effective.
3. The current increased emphasis on formal exports will limit the extent to which both livestock and meat are exported into the DRC.

Recommendations

1. Livestock exports should be supported by increasing the cost-efficiency of existing abattoirs. It is important, however, to avoid over-concentrating on the production of quality meat, and ignore selling even the cheapest animal by-products—since a ready market already exists for these by-products and the profits can be used to offset the costs of slaughter.
2. Until the market in the DRC becomes better developed itself, there is little more that can be done to stimulate livestock exports from Rwanda to its main trading partner in this sub-sector.

EGGS

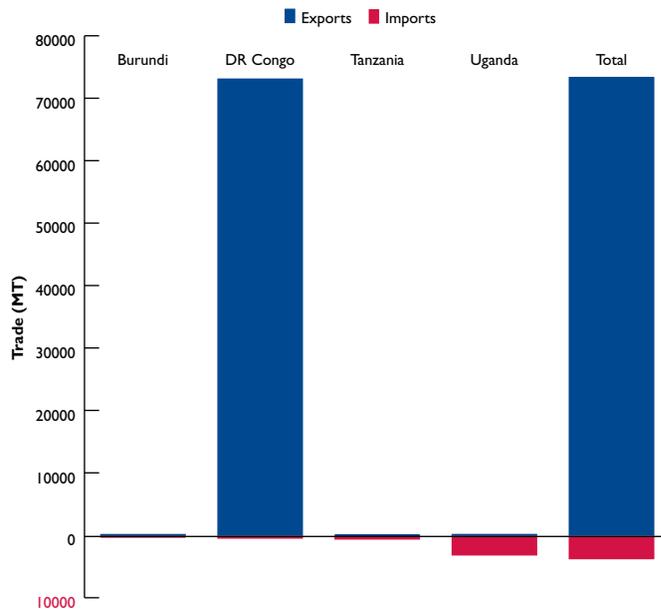
Egg production in Rwanda is dominated by small-scale producers. There are few large production units (the largest has only 10,000 laying hens), no feed mill, and the flocks are highly susceptible to disease. In fact, egg production was decimated by avian flu in 2005. Nevertheless, the industry has rebounded and output has been increasing since 2007 (Figure 47).

Although the volume of production is small (2900 MT corresponds to 58 million medium-sized eggs, or per capita consumption of 5.1 eggs per year), Rwanda is now a net exporter (Figure 48).

Almost all of the exported eggs are sent to the DRC through informal channels. Imported eggs are exclusively from Uganda, and are probably imported formally from hatcheries (since Rwanda is unable to produce enough hatching eggs of its own), although some imports may be table eggs. Nevertheless, the volume of imports is minuscule when compared with exports. Some informal but negligible imports do occur from Tanzania and the DRC, consisting of opportunistic imports in response to local market fluctuations.

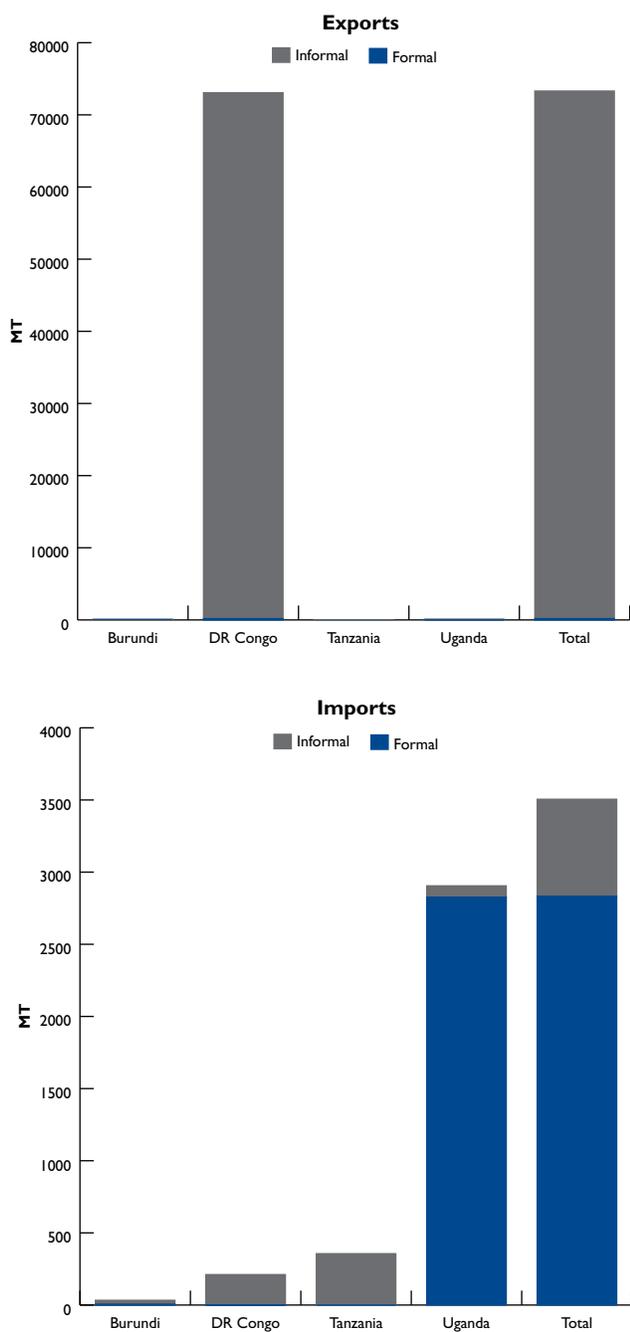
The price of eggs can vary considerably throughout the region. In Rwanda over the last 12 months, the price of eggs at Gisenyi has remained close to US\$5.00 per tray of 30, but in November 2012, the price in Musanze was only \$3.50. In Uganda at the same time, the price in Kabale was similar (\$3.50), but in Kisoro, it was \$4.68, while in Ngozi market and Bujumbura in Burundi, the price was consistently \$4.00. These variations suggest that there are market opportunities yet to be exploited. Clearly, prices at Gisenyi are influenced by demand in the DRC, but there was a significant difference between the price in Gisenyi and that in Musanze—which suggests either that market information is lacking or that the movement of eggs from one place to another is costly. A similar unexplained difference existed between Musanze and Kisoro, where eggs were significantly more expensive.

FIGURE 47: TOTAL VOLUMES OF EGGS TRADED, 2009–2012



Sources: National Bank of Rwanda; Rwanda Revenue Authority; UN Comtrade.

FIGURE 48: FORMAL AND INFORMAL EXPORTS AND IMPORTS OF EGGS, 2009–2012



Sources: FAO; InfoTrade Uganda; Rwanda eSoko; WFP.

It would appear that there is potential to increase the export market for eggs produced in Rwanda, especially into the DRC, but also (unexpectedly) into parts of Uganda. The margins available in the Burundi market are unlikely to cover transport costs. The interviewed stakeholders also noted that, regardless of the price differential, there is a market in Uganda for “traditional” eggs—eggs that are produced by free-ranging hens and have a distinctive taste and yellow color. Because mass poultry production is intensifying in Uganda, traditional eggs are becoming increasingly scarce and can command a premium price. At present, although Rwanda primarily produces “traditional” eggs, there is no network of traders who can accumulate and market significant volumes of them; therefore this niche market remains largely unexploited and serviced only by a few informal traders.

Conclusions

Overall, it is evident that even though egg production in Rwanda is limited, an export market still exists, which could be developed further as production increases. Moreover, the unique characteristics of Rwandan egg production could be used to develop a niche market for “traditional eggs” in Uganda.

CROP INPUTS

Much of Rwanda's agricultural production has been based on the use of home-saved seed and manure as opposed to artificial fertilizer. The CIP has resulted in a significant change of emphasis towards improved seed varieties and the increasing use of artificial fertilizer—and Rwanda now possesses significant assets that could be exported to neighboring countries. At the same time, however, some of these crop inputs have been provided on a subsidized basis, which can lead to monetization and informal export. During the course of cross-border interviews with traders, this study assessed the potential markets for seed and the extent to which informal sale of fertilizer might be occurring.

SEED

An assessment of markets in neighboring countries⁹⁸ revealed the potential for exporting seed out of Rwanda. Three crops were considered: maize, beans and potatoes, and the seed market for each was examined.

Maize

It is evident that the market for maize seed in Uganda, Tanzania, and Burundi is under-supplied from local resources. In each country, hybrid maize seed was found in agricultural supply outlets originating from local breeders in Zimbabwe and Zambia. In each case, the imported products were short-season varieties of hybrid seed that could not be obtained locally. These products were selling for 25 percent–50 percent more than the locally produced seed. No maize seed originating from Rwanda was found in any of the markets visited.

Field observations suggest that there is a market opportunity for producing seed for short-season varieties of maize and selling it in neighboring countries. Hybrid varieties are generally preferred because they can combine a short growing season with a higher yield (often 15 percent higher), but these are also more expensive. New open pollinated varieties (OPVs) of maize are now available that also allow for a shorter growing season, albeit at a lower yield. OPVs have these advantages:

- » They are cheaper to produce.
- » They can be saved and reused by the farmer for at least three generations (hybrid seed can only be used once).

Rwanda is at the forefront of both hybrid and OPV breeding programs for short-season varieties and has produced a number of varieties that could compete with the short-season varieties currently being exported out of Zambia and Zimbabwe to Uganda, Tanzania, and Burundi.

Beans

The international demand for Rwandan bean seed—particularly new climbing varieties released in 2010 by the Institut de Sciences Agronomiques du Rwanda (ISAR)—is currently low, but based on the increased use of these varieties for domestic production, the potential cross-border market should be considerable. Some production of Rwandan bean varieties is already occurring in Uganda and Kenya, both as a result of informal seed transfers and through promotion by national agricultural extension services. Some projects have distributed the best seed varieties both within and between neighboring countries⁹⁹ in the region, and positive results have been reported.¹⁰⁰ It can be expected that farmers in Uganda, Burundi, and the DRC, where agro-ecological conditions are similar to those in Rwanda, will increasingly demand seed of these higher-yielding varieties.

⁹⁸ Sufficient data was unavailable in the DRC.

⁹⁹ International Livestock Research Institute, Value added bean technologies for enhancing food security, nutrition, income and resilience to cope with climate change and variability challenges in Eastern Africa, 2011.

¹⁰⁰ Farmer reaps big from new bean variety from Rwanda: www.hortico.co.ke/article?id=417.

Stakeholder interviews have clearly indicated that market linkages are not yet sufficient for fully satisfying both domestic and international demand for improved bean seed. It will be important to ensure that Rwanda is able to capitalize on this potential cross-border market by developing seed production, certification, branding, and marketing systems that will enable the country to take full commercial advantage of the varieties that have proven successful in the domestic market.

Potatoes

Potato producers in both Rwanda and neighboring areas of Uganda suffer from a shortage of quality potato seed.¹⁰¹ Rwanda is able to produce some seed in highland areas—where insects are less prevalent and the viral transmission/infection rate is proportionately low. Uganda can also produce some seed, but volumes have been limited and demand has remained unmet. In Rwanda, programs have been initiated to increase the production of seed potatoes, including the use of in vitro cultivation techniques and green house production of plantlets prior to multiplication in the field. A program working with Impuyaki cooperative in Gicumbi District has been developing both production and market outlets to increase the availability of seed to domestic growers.

It can be expected that domestic demand for seed potatoes will be paralleled by cross-border demand in Uganda, which is reportedly just as intense.¹⁰² On this basis it can be expected that there will be increasing opportunities to develop the market for exporting branded Rwandan seed potatoes into Uganda.

Conclusion

There is as yet very little export of seed out of Rwanda. Nevertheless, observations in neighboring markets indicate that the potential demands for short-season maize seed, climbing bean seed, and disease-free seed potatoes can all be expected to increase over the coming years. It is recognized that the seed sector must first meet domestic demand, but once that has been achieved, **the potential for an increase in exports of certified and branded Rwandan seed material in any or all of these subsectors is considerable.**

FERTILIZER

According to the International Fertilizer Development Center (IFDC), Rwanda imports 30,000 MT of fertilizer consisting of 8,000 MT of urea, 10,000 MT of di-ammonium phosphate (DAP), and 12,000 MT of NPK (nitrogen, phosphorous, and potassium) compound. The NPK is used primarily for rice and potato production and is distributed on a fully commercial basis. Urea and DAP are intended for wheat and maize, and distribution is subsidized through a voucher-based credit system providing each grower with inputs for 0.5ha. The cost of urea and DAP to growers is thus minimal (indeed, initially zero¹⁰³) and, as a result, some proportion of these inputs is sold off to meet immediate cash needs. One report indicated that 2,000 MT was exported to Burundi over a three-month period, suggesting that a substantial proportion of the fertilizer imported into the country was in fact re-exported.

In order to verify these reports, Rwandan fertilizer was sought in each of the markets visited. The results are detailed below.¹⁰⁴

Tanzania

Retail outlets reported that since fertilizer was subsidized in Tanzania, there was little demand for exports from Rwanda. In Bukoba, Biharamolo, Mwanza, and Ngara, traders indicated that all fertilizer was obtained from local sources. It was only in Geta that a small volume of urea was found that was reportedly sourced in Rwanda. Overall there was very little evidence of any regular exports into Tanzania.

¹⁰¹ Koninklijk Instituut voor de Tropen, "Linking Actors for Potato Production and Marketing," *ROPARWA and IMBARAGA initiatives in North West Rwanda*, Bulletin 374 (2006).

¹⁰² International Institute of Tropical Agriculture, "The Marketing Potential of Potatoes in Uganda and Market Opportunities for Rwanda," 2001.

¹⁰³ Farmers are only expected to repay the cost of the fertilizer at harvest.

¹⁰⁴ No data on the DRC was available.

Uganda

In Uganda, as in Tanzania, traders reported that since agricultural inputs were zero-rated for VAT in Uganda and subsidized, there was little incentive to purchase inputs from Rwanda. Investigation found no evidence of fertilizer imported from Rwanda in Kabale, Mbarara, Kisoro, or Ntugamo. The conclusion drawn was that any such trade was negligible.

Burundi

Fertilizer in Burundi is distributed simultaneously through subsidized channels (by the Ministry of Agriculture) and through commercial channels. Ministry officials and traders both noted that fertilizer intended for subsidized distribution found its way into commercial channels so that the actual volumes of subsidized inputs available to farmers were always inadequate and commercial prices were invariably high.

For example, Nyamurenza commune had 1,700 ha under cultivation but received only 20 MT of fertilizer priced at BF40,000 per 50kg bag (US\$540 per MT). The price of commercial fertilizer was BF80,000 per bag (US\$1080/MT). Under such circumstances, there is considerable incentive for growers to purchase inputs from Rwanda if these are available. In fact, growers at that commune indicated that they could source both NPK and DAP from Rwanda at a price of BF75,000 per bag (US\$1000/MT). The price was high, but nevertheless lower than that charged by local traders. Traders from Rwanda move fertilizer by boat along the Kagera River, which forms the border with Burundi, and up tributaries into Burundi for sale directly to growers. Such trade is only possible where border conditions permit easy movement of fertilizer.

By contrast, traders at Nemba indicated that they would never be able to bring fertilizer across the border since it was heavily patrolled and that any fertilizer found would be confiscated.

Nevertheless, it is evident that demand exists in Burundi to export fertilizer out of Rwanda, and where this trade is possible, it will occur. The overall extent of this trade could not be determined.

THE GENDER DYNAMICS OF CROSS-BORDER TRADE

INFORMAL TRADE

Informal cross-border trade is conducted predominantly by women. In fact, according to MINICOM's National Cross-Border Trade Strategy, women comprise up to 74 percent of all informal cross-border traders.¹⁰⁵ This is undoubtedly the case in some instances,¹⁰⁶ but interviews with customs officials and with National Bank data collectors contradicted this assertion and revealed considerable variation according to the nature of the border post.

In the DRC, informal trade has been well-documented¹⁰⁷ and dominated by female traders.¹⁰⁸ The predominance of women in informal trade occurs despite the fact that women traders face heightened harassment, trade in goods with the lowest profit, and they have the lowest levels of access to capital.¹⁰⁹ Nevertheless, recent comprehensive surveys¹¹⁰ have shown that women are considered better able than men to negotiate the tracasseries that characterize trade across the DRC borders.¹¹¹ Interviews with traders indicated that men were less able to tolerate the harassment that inevitably accompanied informal cross border trade, while women were perceived to have better negotiating skills. Thus, despite the specific disadvantages that they face, women represent the majority in informal cross border trade because, as one woman put it, "Women are good at adapting to the many restrictions in small trade."

Many recommendations have been made to facilitate greater formalization of cross-border trade with the DRC, but it is notable that if these were to be implemented effectively, the advantage of informal trade and the involvement of women would be considerably diminished. Accordingly, attempts to encourage formalized trade should be matched with strategies to ensure the inclusion of women, through adequate public service infrastructure and wider representation in public and private trade networks.

At the other borders, however, informal cross border trade appears to be undertaken by both men and women, often working in combination, depending on the nature of the border and the commodity. Customs officials estimated that the proportion of women trading informally at the busiest border post at Gatuna/Katuna was 20 percent. At Rusumo, the proportion was estimated at "less than half" (although no more than 50 traders per day crossed this border). The proportion of women trading informally at Akanyaru/Kanyaru was estimated by customs to be 30 percent.

In general, it appears that where a commodity is bulky, the terrain is challenging, or the commodity is collected from a number of small producers at some distance from the border, cross-border trade is predominantly carried out by young men using bicycles. This was especially the case at Gasenyi/Nemba, Kyanika/Musanze and to a lesser extent, Gatuna/Katuna. In each of these cases, young men either source or supply substantial quantities of potatoes, beans, or other commodities across the border, travelling as far as they could reach to be able to return to their home markets within the day. Round trips of up to 70 km to trade lots of 100kg were commonly reported across terrain that invariably included steep hills. These endeavors were rarely carried out by women. When asked why this was the case, both men and women interviewed agreed that it was the physical requirements, and not economic or social constraints, that favored young men. It was reported that the women operate the stalls at which the

¹⁰⁵ Ministry of Trade and Industry (MINICOM), National Cross-Border Trade Strategy (September 2012).

¹⁰⁶ This figure is based upon four border crossings, two of which do not include Rwanda. It ignores the traffic into and out of Uganda and Tanzania and the main border posts with Burundi.

¹⁰⁷ International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012. International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012.

¹⁰⁸ Data suggests that women comprise 84 percent of informal traders between Cyanguu and Bukavu. International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012.

¹⁰⁹ International Alert, "La Traverse: Petit commerce et amelioration des relations transfrontieres entre Goma (RTD Congo) et Gisenyi (Rwanda)," June 2012.

¹¹⁰ International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012, page 36.

¹¹¹ International Alert, "Walking in the Dark: Informal Cross-Border Trade in the Great Lakes Region," August 2012.

produce is eventually sold and might finance the cross-border purchase of goods but were not taking part in the actual transport. In such situations, it appeared that trade in bulky agricultural commodities was not dominated by women, rather it required the activities of both men and women to achieve the end result.

This does not imply that women were observed to be excluded from informal trade across these borders. Rather, women were rarely involved in the cross-border transport of the particular commodities of concern to this study. It was reported that women were frequently involved in the transport of other higher-value/lower-volume agricultural commodities (such as eggs, cheese, or sugar) and would hire taxis or travel by minibus to transport their goods across the borders.

FORMAL TRADE

Interviews with customs officials at each border indicated that formal cross-border trade was largely conducted by men, but that an estimated 20–40 percent¹¹² of traders are female entrepreneurs. Given that transporters, rather than the entrepreneurs themselves, are often present at the border, it is likely that the proportion of formal cross-border traders who are women is higher still.

The constraints faced by women in formal agribusiness are representative of the treatment of women economy-wide. Analysis of these constraints is beyond the scope of this analysis, but the Asian Development Bank has conducted a comprehensive assessment on progress towards improving women's economic status.¹¹³

¹¹² Customs Officers at Rusumo estimated 20 percent, while at Katuna authorities estimated "as much as 40 percent."

¹¹³ Asian Development Bank, "Gender Assessment: Progress Towards Improving Women's Economic Status," 2008.

CONCLUSIONS

Although Rwanda may not necessarily be the lowest-cost producer of agricultural commodities, it can nevertheless access cross-border markets based on aspects other than price, including appropriate processing, seasonality, quality, and branding—and above all, the (as yet inadequately developed) capacity to respond to changing market requirements in neighboring countries.

As highlighted in this analysis, a key aspect of developing Rwanda's cross-border trade is the need to improve market linkages between producers and buyers, and most importantly, between traders within Rwanda and their end markets in other countries. Opportunities are being missed to export potatoes, beans, and dairy products as a result of limited market linkages that:

- » Restrict the accumulation of marketable volumes (especially of beans).
- » Result in inconsistent supply—thus reducing market penetration.
- » Prevent growers from acting on identified export opportunities.

Cooperatives could play a major role in linking growers to markets, but the clear message from trading/processing stakeholders was that further development of cooperatives is necessary, especially in the commercial aspects of trade, before they could fill this role effectively.

Another key opportunity highlighted by this analysis is in processing. A simplistic assessment of comparative advantage would suggest that there is no clear benefit to processing raw materials in Rwanda, especially given high levels of electricity costs, relatively high labor costs, and the additional “burden”¹¹⁴ of an effective system of taxation. In practice, however, Rwanda frequently demonstrates the opposite, especially for maize meal, cassava flour, and even wheat flour. In each case, the competitive export of these products depends on the specific characteristics of the products or of the markets they are sold in, suggesting a sound export potential for these products which could be developed further.

These observations are congruent with the Government's Strategic Plan for the Transformation of Agriculture (PSTA) which recognizes the need for enhanced market development. The PSTA lists a number of useful interventions, such as market access, increasing the price of Rwandan exports, and increasing value added, to promote these goals. This list is couched in a framework of public/private partnership that allows for increased private sector participation in an enabling business environment. A number of specific export expansion opportunities were identified, including:

1. **Maize** – The potential to increase Rwanda's maize exports is limited, but increased import substitution is nevertheless possible. This will likely be more cost effectively achieved through improved post-harvest handling and storage than through increased production.
2. **Maize meal** – There is a market for maize meal based on the production of a lower-quality product that is highly demanded in a cost-sensitive market.
3. **Beans** – Rwandan beans can be produced at a price that is competitive in neighboring markets, especially in Uganda. The main constraint to increased export trade lies in the cost of accumulating a marketable volume of beans of consistent quality. Increased exports will be possible if the transaction costs between the farm-gate and exporter can be reduced.

¹¹⁴ This represents an additional cost only by comparison with other countries where taxes are less efficiently collected.

4. **Potatoes** – Rwandan potatoes can be produced at a price that is competitive in neighboring markets. The main constraint to increased export trade appears to lie in the development of efficient trade networks into Uganda and Tanzania, taking advantage in particular of the substantial haulage capacity that is returning empty through Kampala and Mwanza.
5. **Cassava** – The potential to increase exports of cassava out of Rwanda is limited by the perishability of the product. Nevertheless, marginal increases in import substitution are possible. Given the dramatic increase in productivity that has been achieved to date, it now appears reasonable to look for further gains from improved post-harvest handling and processing, especially the drying of fresh cassava and the production of garri.
6. **Rice** – Though Rwanda is unlikely to be able to develop a substantial export market for rice, there is scope to increase the degree of import substitution. Nevertheless, since the productive area for rice is inherently limited and yields are already high, reduced imports would result mainly from reduced post-harvest losses in Rwanda itself.
7. **Milk** – Rwanda produces a surplus of milk which appears likely to grow as increase in demand lags behind increasing supply. Irrespective of cost, Rwandan UHT milk and cheese have established and receptive markets in the DRC, Burundi and even Uganda. There is an advantage to be gained from developing brand awareness of Rwandan dairy products. There is also a need to strengthen the supply chains in Rwanda and neighboring countries to ensure the consistency of supply.

A number of other observations were made, including:

1. **Seed** – There is an undeveloped market for quality maize, beans, and potato seed in neighboring countries, especially Uganda and Tanzania.
2. **Fertilizer** – There is little evidence of fertilizer export to any country other than Burundi, where trade occurs at a village level and amounts cannot be quantified.
3. **Livestock** – Although exports of livestock represent a substantial proportion of all trade, exports into the DRC are mainly in the form of live animals. This is because the value added during the slaughter process in the DRC is greater than in Rwanda. As a result, investment in abattoir and cold chain facilities may develop the domestic livestock market, but will do little to enhance cross-border trade.
4. **Wheat** – Despite considerable effort, Rwandan wheat producers have so far failed to produce wheat suitable for bread flour. Given the availability of suitable wheat on the world market, farmers would be better served by developing a trading and processing network that would allow them to sell their existing wheat production more effectively for processing into biscuit and chapatti flour, rather than focusing on local production of bread quality wheat.
5. **Women** play a significant role in cross-border trade. They are well represented in the formal sector. Though women dominate informal trade into the DRC, informal trade elsewhere depends on the activities of men and women working together.

Overall, this analysis indicates that the cross-border trade that currently occurs depends less on the obvious comparative advantages associated with agricultural production and more on post-production factors, including processing and, in particular, marketing. The EDPRS has already recognized the need to promote the development of business alliances and the integration of firms into value chains, which are both critical to efficient market development. From this perspective, Rwanda can expect to develop a number of export markets (as outlined above). However, success in doing so will depend more on increased support for developing a vibrant trading network that can supply specific commodities into identified markets than on efforts to increase efficiencies in agricultural production.

In some instances, Rwandan exports may benefit from developing niche markets based on quality and brand awareness. In other instances, however, Rwanda is able to benefit from being the lowest-cost exporter of lower quality products. This is especially true of:

- » Maize meal exported into the DRC and Burundi (and sold on the domestic market).
- » Fermented milk informally exported into Burundi
- » Livestock informally exported to the DRC.

As the agricultural trade sector develops, care should be taken to avoid the erosion of these comparative advantages. Imposing domestic and export grades and standards, for example--while necessary to ensure public health--should avoid excluding these export products from the markets they currently enjoy. Therefore, the development of an enabling environment will need to be sensitive to the specific needs of small businesses and the products they trade in.

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This report was produced by the USAID/Enabling Agricultural Trade (EAT) project, implemented by Fintrac Inc.

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