



MINISTRY OF AGRICULTURE AND ANIMAL RESOURCES

REPUBLIC OF RWANDA

National Post-Harvest Staple Crop Strategy

March 2011

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DISCLAIMER

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

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ACRONYMS & ABBREVIATIONS

ACGF	Agriculture Credit Guarantee Fund
ACTESA	Alliance for Commodity Trade in Eastern and Southern Africa
BAS	Business Advisory Services
BDF	Business Development Fund
BRD	Rwanda Development Bank
BNR	National Bank of Rwanda
CAADP	NEPAD’s Comprehensive Africa Agriculture Development Program
CEPGL	Economic Community of the Great Lake Countries
CIP	Crop Intensification Program
COMESA	Common Market of East and Southern Africa
DFID	Department for International Development [UK]
DRC	Democratic Republic of Congo
EAC	East African Community
EAGC	East African Grains Council
EDPRS	Economic Development and Poverty Reduction Strategy
GOR	Government of Rwanda
ILO	International Labor Organization
ISAR	Rwanda Agriculture Research Institute
MDG	Millennium Development Goals
MIDIMAR	Ministry of Disaster Management and Refugee Affairs
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINEAC	Ministry of East African Community
MINICOM	Ministry of Trade and Industry
MININFRA	Ministry of Infrastructure
MINSANTE	Ministry of Health
NEPAD	New Partnership for Africa’s Development
NISR	National Institute of Statistics
OPM	Operations Procedures Manual
PHSCS	National Post-Harvest Staple Crop Strategy
PHSS	Post-Harvest Strategy Implementation Secretariat
PMP	Performance Monitoring Plan
PSF	Private Sector Federation

PSTA II	Strategic Plan for the Transformation of Agriculture in Rwanda – Phase II
RADA	Rwanda Agricultural Development Authority
RARDA	Rwanda Animal Resources Development Authority
RBS	Rwanda Bureau of Standards
RCA	Rwanda Cooperative Agency
RDB	Rwanda Development Board
RIF II	Rural Investment Facility – Phase II
RRA	Rwanda Revenue Authority
RSGR	Rwanda Strategic Grain Reserve
RWF	Rwanda Francs
SACCOS	Savings and Credit Cooperatives
SGR	Strategic Grain Reserve
UOB	University of Butare
WFP	World Food Program

EXECUTIVE SUMMARY

The National Post-Harvest Staple Crop Strategy is a policy framework that will assist with strengthening the harvesting, post-harvest handling, trade, storage, and marketing within staple crop value chains in Rwanda, in an effort to improve markets and linkages for farmers, and reduce post-harvest losses. The Strategy’s fundamental vision,

‘to reduce food insecurity through an efficient post-harvest private sector system delivering staple foods to the people of Rwanda,’

has been guided by the Government of Rwanda’s Vision 2020, EDPRS, and PSTA II. The Government of Rwanda (GOR) has clearly prioritized the development of the agriculture sector as a means of reducing poverty, which is predominantly focused in the rural areas, and of driving economic growth. Staple foods are critical because rural populations are disproportionately affected by food insecurity, and farmers retain a portion of their production for household consumption. Staple crops are a useful rotation crop in a farmer’s production system, and can contribute to household income. These crops are also what the farmers best know how to grow and sell, and therefore provide familiarity as they gradually move to newer, higher potential (and higher risk) crops. It is important to note that commodity markets are inherently risky, difficult, and competitive. To capture income potential from increased productivity and production competitiveness, which are fundamental drivers to sustainability of farmer technology adoption, market linkages and supply chain efficiency must also receive investment and prioritization.

The National Post-Harvest Strategy will support farmers capture income potential from increased productivity and competitiveness resulting from complimentary investments, including CIP. This requires engagement across ministries, institutions, agencies and stakeholders along the supply chain resulting in a “win-win” for producers, trade, industry and processing, and consumers.

Commercial perspectives and market facilitation are critical for regionally competitive staples value chains. The private sector, which includes all value chain actors (from farmers to retailers), is best positioned to be the driver of improved efficiencies, increased investment, and economic growth. The government should provide the enabling environment and soft infrastructure for private sector development and operation, supportive of competition and market efficiency; investment in public infrastructure including roads to reduce costs in reaching markets; and provide a predictable and transparent policy and regulatory framework.

National Post-Harvest Staple Crop Strategy Objectives:

By focusing on post-harvest development, the National Post-Harvest Staple Crop Strategy aims to:

- Strengthen food security among rural staple crop producers;
- Improve consumer access to safe and affordable food;
- Support the private sector to invest in strengthening the competitiveness of the staple crop value and supply chain;
- Improve efficiency and decrease marketing costs along the staple crop value chain; and

- Enhance producers' access to, and linkages with, markets.

An indicative budget suggests that the 5-year costs will be \$67.9million USD.¹

Guiding Principles

The fundamental guiding principal of this strategy is to align with, leverage, and build upon the SWAp mechanism (sector-wide approach) for inter-ministerial coordination with relation to funding and actions for the agriculture sector.

Strategic Axes of Intervention

1. Information available for public and private sector decision making

- Strengthen basic data system
- Private sector generating market intelligence

2. Efficient and equitable transport systems across staple crop producing areas

- Investigate transport component of staple crop marketing costs
- Reduce road transport costs between production and secondary aggregation points in high potential areas
- Address prioritized 'soft' constraints

3. Reduce staple crop post-harvest losses at producer and first aggregator level

- Build ISAR Post-Harvest Team capacity
- Identify and prioritize economically relevant post-harvest technology
- Disseminate and promote the uptake of technology
- Reduce post-harvest losses

4. Strengthen private enterprise in staple crop value chains

- Empower the private sector to support the delivery of staple foods to the market
- Transfer skills to all enterprises involved in moving staple grains into markets
- Sufficient storage available throughout the supply chain for harvested staple grains

5. Increase private sector post-harvest investment

- Private sector accessing financial services

6. Enhance structured staple trade

¹ Axis level indicative budget – see page 41.

- Expand staple crop grades and standards
- Extend awareness of staple crop grades and standards
- Improve staple crop market trade infrastructure

7. Transparent strategic grain reserve supporting food emergency needs and liberalized markets

- RSGR functioning under sound principles and transparent management
- Leverage RSGR buying power to support disadvantaged viable markets which will be benefited by prioritized road improvements

1. INTRODUCTION

Agriculture employs over 80% of the population, contributes 34% to the GDP, and is the main earner of foreign exchange in Rwanda. Because of this important economic role, the agriculture sector holds a strategic position within the Government of Rwanda's (GOR) medium and long-term goals as outlined in the Vision 2020 and the Economic Development and Poverty Reduction Strategy (EDPRS).² The fundamental objective of becoming a middle-income country by 2020 is founded on critical pillars including a private sector-led economy, a productive and market oriented agriculture sector, and regional economic integration with a liberal trade regime.³ These pillars are particularly important grounding in the development of sub-sector development strategies and implementation plans. EDPRS, the near term national implementation plan, focuses particularly on macro-economic stabilization and poverty reduction as first steps toward the long-term vision.

The overarching agriculture development strategy is outlined in the Strategic Plan for the Transformation of Agriculture in Rwanda – Phase II (PSTA II.) The PSTA II highlights the need to develop non-traditional crops and horticulture as “an important opportunity to increase rural employment and reduce rural poverty, as these crops typically generate several times more employment and income per hectare than cereals, legumes and root crops do.”⁴ This said, food security of smallholder farmer households remains a critical priority and competitive production of staple food crops can offer some income opportunities for the producers. The Crop Intensification Program (CIP) was launched in September 2007 with the objective of increasing productivity in selected food crops while improving food security and self-sufficiency. CIP has been investing heavily to increase hectares under consolidated production and productivity of staple food crops, including maize, rice, Irish potato, wheat, cassava, beans, soybeans, and peas. Production volumes have increased substantially over the past few years. For example, maize production has reportedly increased from approximately 100,000MT in 2007 to over 430,000MT in 2010, an increase of more than 400%.

National Post-Harvest Staple Crop Strategy

This National Post-Harvest Staple Crop Strategy is a policy framework to assist with strengthening the harvesting, post-harvest handling, trade, storage, and marketing within staple crop value chains; strengthening markets and linkages for farmers, and reducing post-harvest losses. The Strategy's fundamental objective, guided by Vision 2020, EDPRS, and PSTA II, is to reduce food insecurity through an efficient post-harvest private sector system delivering staple foods to the people of Rwanda.

Staple foods are critical in food security, the availability of and access to safe, nutritious, and affordable food. With staple crops, farmers retain a portion of their production for household consumption, they provide a useful rotation crop for a farmer's production system, and they may

² EDPRS covers the years 2008-2012.

³ Vision 2020 has 6 pillars and 3 cross-cutting areas. The pillars are: 1) Good Governance and a Stable State; 2) Human Resource Development and a Knowledge-based economy; 3) Private Sector-led Economy; 4) Infrastructure Development; 5) Productive and Market-oriented Agriculture Sector; and 6) Regional and International Economic Integration. The cross-cutting areas are: a) Gender Equality, b) Environmental Protection and Natural Resource Management, and c) Science and Technology development, including ICT.

⁴ PSTA II, page 70.

contribute to the household income. Staple crops are also what farmers know best how to grow and sell, and therefore provide familiarity as they gradually move to newer, higher potential and higher risk crops. To capture income potential from increased productivity and production competitiveness which are fundamental drivers to sustainability of farmer technology adoption, market linkages and supply chain efficiency must also receive investment and prioritization.

This Strategy has been developed via a consultative process with critical stakeholders including individual interviews and group fora. The current relevant macro and micro context is presented, followed by an overview of existing policies and legislation, and regulations affecting post-harvest handling, storage and marketing, from the regional level down to the levels of districts. Section 5 presents the strategic axes of intervention of the National Post-Harvest Staple Crop Strategy.

Commodity Markets and Post-Harvest

Commodity markets are inherently risky, difficult, and competitive. These markets are linked with surpluses and shortages in international markets, as noted during the sharp rise in global food prices in 2008. Characterized along the entire value chain by tight margins, profits are made by proficient handling (or processing) of large volumes, and adept risk management. Inefficient and weak value chains impede market signals between end markets and producers. Strong market signals, principally price, can stimulate supply and investment in improving quality or expanded capacity.

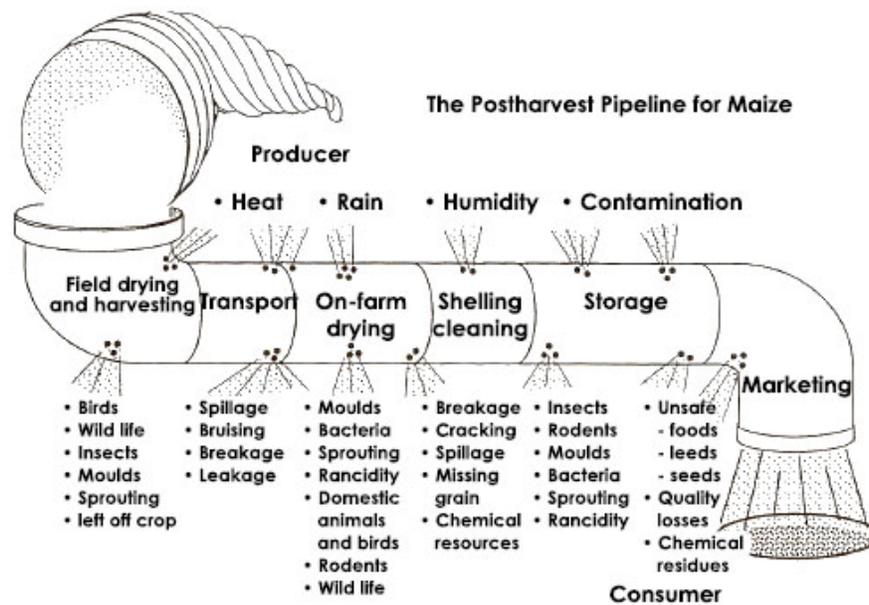
Post-Harvest Activities and Post-Harvest Loss

Many post-harvest activities occur after harvest prior to consumption by formal or informal markets; these include primary handling (drying, threshing, shelling, winnowing, sorting), aggregation and transport, storage and speculation, marketing, and processing. The harvest process itself can also be considered a post-harvest activity because it significantly impacts the stabilization and perishability of the product, and takes place after production has finished.

While cereals and legumes are not considered particularly perishable products, losses can occur at many points after harvest. Reducing post-harvest losses can increase the volume and value of staple crops within the market and available for consumption and sale. Post-harvest losses are quantitative or qualitative loss resulting in a measurable decrease in monetary value. However, post-harvest loss does not include crop conditioning or 'shrink.' For example, in the case of cereals and legumes, grain is often harvested at a moisture level that must be brought down to stabilize or condition the grain for storage or sale. Grain harvested (with yield recorded) at 23% moisture, subsequently dried and sold at 13% moisture, has a 10% reduction of weight, but this is not a 10% post-harvest loss. This change in weight resulting from primary handling and conditioning is 'shrink.' Thus, yield at harvest should not be used as a proxy for volumes available or entering the market. Shrink should be accounted for and reported in national supply and demand analyses.

Figure 1 illustrates types and occurrences of quantitative and qualitative post-harvest losses in the maize supply chain. It is important to not only understand what losses occur, but also to analyze the value and point of occurrence to determine the economics of reduction.

Figure 1: The Postharvest Pipeline for Maize



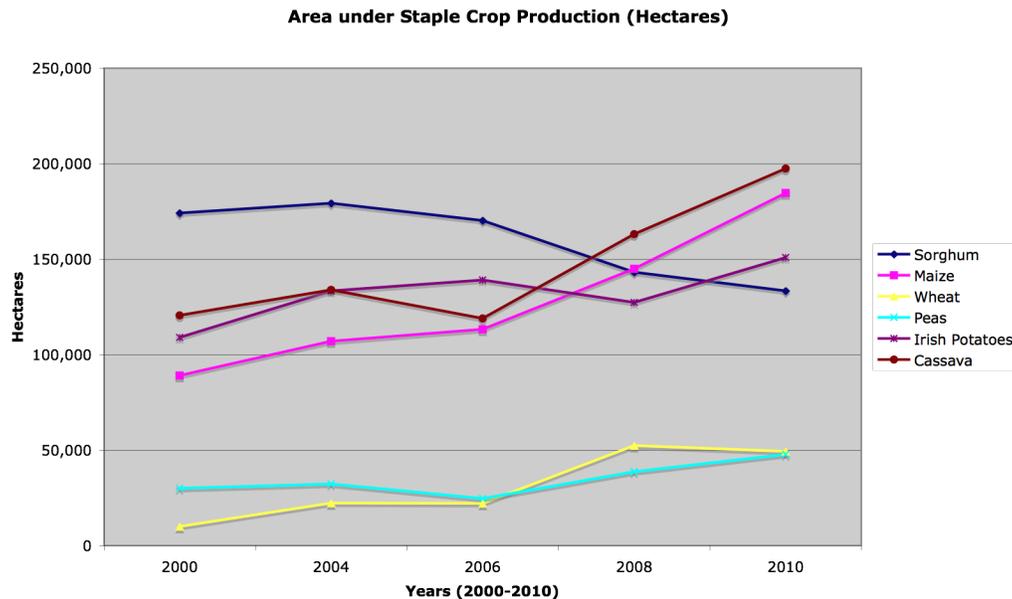
UNDP/OPS, 1991

Of particular relevance to Rwanda are the challenges of field drying, pre-harvest, and the moisture related quality issues (including molds and microtoxins) during handling, subsequent storage, and processing when suitable moisture levels are not reached immediately post-harvest. In addition to post-harvest losses, other supply chain inefficiencies result from high costs associated with transport and logistics, as well as the lack of progressive intermediaries.

Multiple Seasons and Rolling Harvests

Over the past 10 years, there have been significant shifts in staple crop production areas, as shown in Figure 2. Beans, which have the largest area under production, are the only staple crop that has remained relatively stable at around 330,000 hectares. In comparison, sorghum area has decreased by more than 20%. Maize area is the most significant with a more than 300% increase in area under production (as noted in the above section, the increase in maize production (MT) was over 400%.) Wheat area has increased significantly, almost 600%, but the relative areas remain appropriately modest given production potential and markets. The largest shifts have occurred since the CIP program's inception in 2007, and have been mostly driven by that activity and not as a response to any particular new or emerging market development.

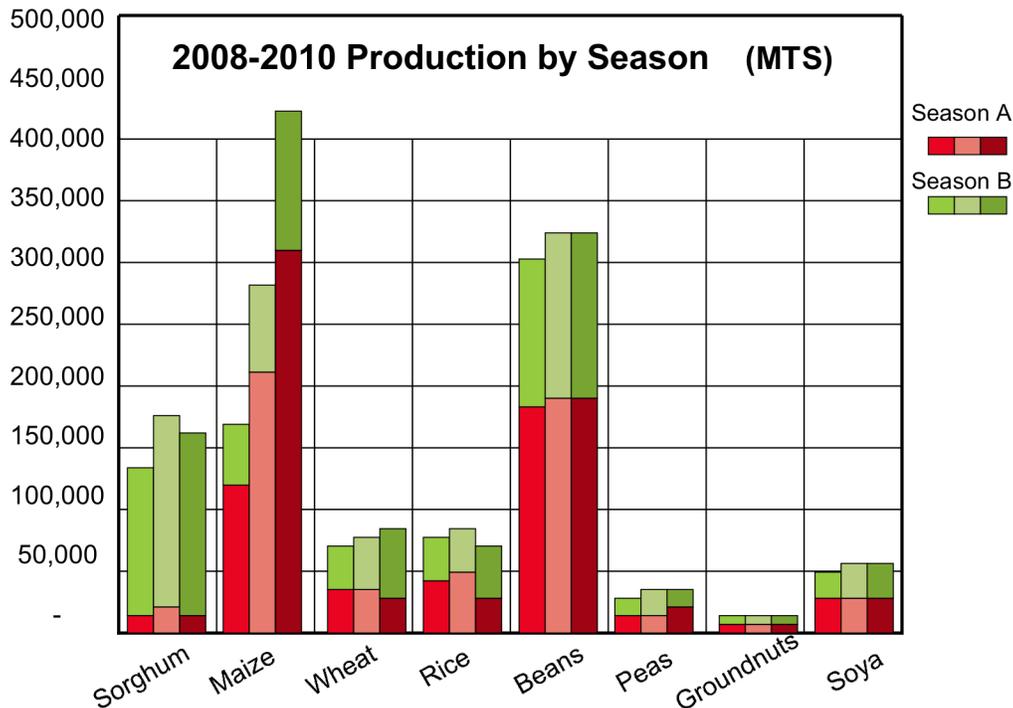
Figure 2: Area under Staple Crop Production in Rwanda, 2000 - 2010



While overall production numbers (area, yields, production) are useful, the more interesting post-harvest view within the Rwanda context is the production over the course of any one year. Rwanda is relatively unique in that there are at least two main staples seasons (Season A and Season B, with a third season, C, available in the marshlands.) Some crops have significant or equal second harvests, as shown in Figure 3 below. With approximately 6 months before a substantial new harvest, and particularly rolling harvest⁵, the market relies on the trade moving from one area of harvest to the next; with the priority on handling, with relatively small storage capacity – rather than large purchases at harvest and storage for significant periods of time. Where this makes agronomic sense, the impact on the market of promoting production of any particular crop in both main seasons would be positive. Regional trade further enhances this ‘leveling’ of temporal supply available within the market, where staple crop seasons within the region add to the rolling of harvests.

⁵ Rolling harvest describes where a particular crop harvest season occurs over the course of many weeks or even months as the crop matures and is harvested at slightly different times between sub-regions or districts. This results in a steadier entrance of product into the market without the severe supply dumps or shortages in the market.

Figure 3: Staple Crop Production in Rwanda by Season, 2008 - 2010



Staple Crops Market Context

The post-harvest supply chain can be divided into three key categories of stakeholders and objectives: 1) consumers and end markets; 2) trade and industry (bulking, secondary handling, traders, and processing); and 3) producers, farm gate, and cooperatives (primary handling and processing.) The market (end markets, trade, and industry) can be segmented between the informal (petty traders, small unregistered mills or artisanal processing) and the formal actors. The formal staples markets can be further segmented into two main groups:

- the ‘formal private sector’ including larger traders that may have established relationships with commercial credit, as well as medium and larger registered mills and processing enterprises, and
- ‘structured demand’ involving large-scale, relatively predictable *institutional* buyers, including relief organizations, schools, prisons, military, etc.

Cooperatives conventionally would be considered a part of the formal private sector as they are typically registered marketing service and aggregator businesses that happen to be cooperatively owned. However, cooperatives are presently quite varied in their strength and business execution; thus, the majority of their post-harvest activities and services should be included within the informal market.

1.1.1 Consumers and End Markets

Two principal objectives drive the post-harvest strategy with relation to consumers. Food crops are specifically targeted due to their potential to positively impact 1) food security and 2) self-

sufficiency. In Rwanda, food security disproportionately affects rural producers themselves. Urban consumers and those that principally purchase their staple foods must have sustained access to safe and affordable food.

Food Security

Household level food security is principally an issue for the rural population. Anecdotally, producers retain between 20-40% of their staple food production on-farm for household consumption. The range varies; for example among cereal farmers, individual households have between 0.2 and 2 hectares of grain under production at any one time. Cash from the sale of the remaining 60-80% of the volume produced must cover the entire investment in inputs, improved production practices, and household cash requirements. As noted in a number of sources, including FAO GIEWS Country Briefs and the CIP evaluation report (March 2010), the CIP program and its input subsidies (currently 50% for fertilizer and an effective 100% for seeds) have had a positive impact on rural food security. The economics of sustained farmer adoption of improved inputs and practices must include an analysis of the household's ability to retain staple production for household consumption as subsidies decline. Productivity improvements must reach a level where, especially in the case of cereals and legumes, sufficient cash can be generated by partial sales to cover the total cost of production, including household consumption.

Primary processing and handling, which includes shelling and threshing, drying, and initial aggregation, can occur both at the household and community levels (cooperative or first aggregation point.) There is a risk that if only larger volume aggregation and sales are prioritized and promoted by public or private extension services, this may inhibit the producer households' abilities to retain any for consumption. It is currently unclear whether any of the crops would be returned to the household for the purpose of household consumption if all primary processing occurs at the cooperative or aggregation point.

Safe and Affordable Food

Per capita and total consumption of staple foods, including irish potatoes, beans, sorghum, maize, and cassava, in Rwanda has not been well quantified or documented. For example, while there is a generally held perception that per capita maize consumption is significant, consumption of maize flour is actually a relatively new phenomenon in Rwanda. The only maize consumption estimates identified came from a 2002 report which, while clearly dated, did indicate a trend of increased maize (as flour) consumption within the country.⁶ This report used household surveys to estimate that 50% of maize produced (at that time 62,000MT) was kept for consumption within the producer household for food security. An additional 55,000MT were consumed via maize or maize flour purchases. Of this 55,000MT market demand, 50,000 represented demand from rural purchasers. *At the time of the report publication*, 2010 demand (purchases, excluding production retained within the producing households) was projected to be 72,000MT. There is a clear need to update this information. MINAGRI and others have been backing into demand numbers via the food balance sheet system of watching production, imports, exports, and stocks. Although household consumption volumes and patterns are not well known, they are critical for both public and private sector decision-making.

⁶ CIAT-ATDT/ISAR/IITA-FOODNET and PEARL Project – Rwanda, Maize sub-sector survey, November 2002.

The majority of the staples processing occurs within the informal sector through petty traders, small unregistered mills or artisanal processing. The formal processing sector – medium and larger registered mills and processing enterprises – is relatively small, and functioning dramatically below installed capacity. In the case of maize flour, roller milled flour has a longer shelf life than that which is processed at the smaller, informal hammer mills, which has a shorter shelf life and is consumed within days. Shelf life is clearly not a consumer priority at this time. Hammer mills either mill a customer’s own maize at a fee (toll milling), and/or purchase small amounts of maize from the market and sell flour to passing customers. Producers and other household consumers bring their product to be milled and take it home to consume. Small traders (mainly female) also bring in small quantities of maize purchased within the markets, have it milled and then retail it in the same markets. While there are currently no significant food quality or safety issues within the market, the Rwanda Bureau of Standards (RBS) has been starting to work more with informal staples processors on food safety and quality, as discussed further in the implementing institutions section below.

Animal protein consumption is also relevant to cereals and legumes market demand, as staples by-products are sold into the animal feed industry. Non-ruminant production, principally poultry and pigs, has an important role to play in the development of a concentrated livestock feed industry that can expand staple grain markets. In Rwanda the poultry industry has practically collapsed since the ban on the import of day old chicks and fertilized eggs as a result of the global spread of avian influenza. This import ban has recently been lifted and the National Hatchery reopened, and importers of day old chicks from Uganda and even Brussels have already re-launched operations. During the period of the poultry import ban, the price of chicken paid by the consumer in Kigali rose from 900RWF/kg to 2200RWF/kg. This high price reduced poultry meat consumption significantly.⁷ There is potential to increase the per capita consumption of poultry meat by competitively producing chicken locally. About 70-85% of the consumer price for chicken and eggs typically reflects the cost of feed. In the case of Rwanda, we expect slightly more of today’s production cost than usual to come from the cost of day old chicks, but RARDA’s intentions to prioritize the expansion of the domestic poultry industry will need competitive feed prices therefore reducing the cost of chicken products and increasing consumption. This in turn will benefit cereals and legumes producers with additional markets.

It is also interesting to note that some farmers are able to capture additional value within narrower marketing windows by offering their staple crops as immature, almost horticultural products. These markets need to be better quantified and farmers given support to understand and take advantage of these income opportunities, including green maize and fresh shelled beans. In some areas, prices may be as much as 300% above what the producer would get after the crop reaches full maturity, especially considering the additional investment required for proper drying and handling to reach the more typically traded state. The consumption of maize flour within Rwanda is a relatively new phenomenon while green maize has a longer though not quantified consumption history.⁸

⁷ Anecdotally, urban Kigali consumers eat chicken only once or twice a month in their homes, if that, principally due to price.

⁸ Farmers and cooperatives understand in the past season and this season that the sale of green maize is prohibited, though it is unclear that it is a formal policy and how, if at all, this is being enforced.

1.1.2 Trade and Industry

Commercial perspectives and market facilitation are critical for regionally competitive staples value chains. The private sector, which includes all value chain actors from farmers to retailers, should be the driver of improved efficiencies through increased investment and economic growth. This strategy intends to support the private sector in their role as the engine of economic growth in staples value chains, and improve efficiency and decrease marketing costs along the staples value chains for overall gains in Rwanda's competitiveness in the target staple crops.

The key GOR development strategies including Vision 2020 and EDPRS clearly reflect the general consensus that liberal and open trade regimes are in the long-term best interest of Rwanda. Rwanda's entry in regional economic communities, including the East African Community (EAC) and the Economic Community of the Great Lake Countries, reaffirm this view. The private sector must increase their capacity to compete within the region.

Regional Trade

Rwanda runs a large net trade deficit (all trade, not just staples), as noted in Table 1 below, adapted from the recently published 'Informal Cross Border Trade Survey Report (May 2009 – April 2010)' by BNR in collaboration with MINICOM, RRA, and NISR. While informal trade only represents 5% of total trade, **informal regional exports to EAC and CEPGL countries represent 20% of total exports.**

Table 1: Rwanda's Formal and Informal Trade Flows, May 2009 - April 2010⁹

A comparison of formal and informal trade flows (RWF) to/from Rwanda, May 2009 – April 2010

	Formal Trade	Informal Trade	Total Trade	% share of formal trade	% share of informal trade
Import	610,221,947,805	12,378,008,517	622,599,956,322	98%	2%
Export	109,670,916,532	27,680,139,149	137,351,055,681	80%	20%

(485,248,900,641) Total Trade surplus (deficit)

Further analysis by trading partners indicates that the DRC is the largest informal export market (all trade, not just staples) for Rwanda, representing 80% of informal exports as seen in Table 2.

Table 2: Rwanda's Total Informal Trade Value with Neighboring Countries, May 2009 - April 2010

Rwanda's total informal trade value with neighboring countries from May 2009 - April 2010

Country	Informal Imports '000RWF	% share of total imports	Informal Exports '000RWF	% share of total exports	Total Informal Trade '000RWF	% share of total trade transactions	Informal Trade surplus (deficit) '000RWF
Burundi	3,721,998	30%	3,841,690	14%	7,563,687	19%	119,692
DRC	3,305,014	27%	22,039,231	80%	25,344,245	63%	18,734,218
Tanzania	113,446	1%	17,011	0%	130,458	0%	(96,435)
Uganda	5,237,551	42%	1,782,207	6%	7,019,758	18%	(3,455,344)
Total	12,378,009	100%	27,680,140	100%	40,058,148	100%	15,302,131

⁹ Due to difficulties in obtaining the formal trade data behind the number summarized here, a more detailed discussion of the relative share of different commodities and destinations/origins was not possible.

The study also quantified the value of informal trade in some staple foods, as shown in Table 3.

Table 3: Rwanda's Informal Trade in Staple Crops, May 2009 – April 2010

Rwanda's Informal Trade in Staple Crops			
	Import Value (RWF)	Export Value (RWF)	Balance of Informal Trade
Sorghum	725,763,140	28,180,706	(697,582,434)
Dried Beans	604,475,007	1,352,501,629	<u>748,026,622</u>
Maize Flour	494,476,340	1,219,526,299	<u>725,049,959</u>
Maize	407,380,194	124,886,147	(282,494,047)
Husked Rice	453,825,409	-	(453,825,409)
Irish Potatoes	236,647,863	1,111,648,193	<u>875,000,330</u>
Cassava Flour	65,004,895	481,888,737	<u>416,883,842</u>
Wheat Flour	319,702,648	-	(319,702,648)
			1,011,356,215

Those staples that have notable informal two-way trade, specifically beans, maize flour, and Irish potatoes, may indicate seasonality – where regional comparative advantage does not warrant longer term storage within a specific country; the commodities move between the regional production areas to areas of consumption based on harvest cycles, moving across borders as demanded. While this trade is interesting (particularly since informal exports represent 20% of total exports) and shows positive informal trade balances in Irish potatoes and beans, with a specific opportunity in sorghum; these values represent *relatively* small volumes of commodities (roughly: 3,000MT sorghum imported; and 9,000MT Irish potatoes and 4,500MT dry beans exported.)

National Markets

Staples in Rwanda are largely traded through informal channels and transformed/processed by smaller informal processors. The general push among the public and private sector stakeholders is to strengthen commercial links between producers and their producer cooperatives with the formal markets, which remain limited in relative size, and as noted in the above consumer focused section, operate significantly below capacity.

The formal markets include both formal private sector trade and transformation, and structured demand¹⁰. WFP has a modest, but growing, structured demand purchase portfolio within Rwanda through an expanding Purchase for Progress (P4P) program. The GOR has large buying positions within the staples markets, including some structured demand; prisons, hospitals; but also by the Rwanda Development Agriculture Authority (RADA) who purchases relatively large volumes of locally produced ‘seed’ (not certified) and some grain to be redistributed through their seed support programs.

¹⁰ Structured demand involves large-scale, relatively predictable institutional buyers. These can include relief agencies including various UN Agencies and NGOs, as well as public sector institutions including food reserves, hospitals and health programs, schools, militaries, and prisons.

Using maize as an example, the formal maize processors in Rwanda purchased approximately 60,000 MTs in 2010, while the structured demand markets bought about 20,000 MTs. Considering the reported 430,000 MTs of 2010 maize production, the formal markets purchased less than 20% of total production. This percentage is even smaller when one considers that the 60,000 MTs of maize purchased and processed most likely included maize originating in neighboring countries.¹¹

The relevance of the animal feed industry to the staple grains markets has also been discussed in the previous section. They are considered part of the formal market, with quality and cost requirements that may be even higher. Continued expansion of the livestock industry, especially broiler (chicken meat) and layer (table egg) operations, will assist the animal feed processors to leverage their unused capacity and should assist in expanding the formal demand for quality improvements along the chain. It must be noted at this point that small-scale dairy expansion will not have a significant effect on the feed industry development, but should also benefit from the development of a concentrated feed industry focused on non-ruminant livestock production.

Many staples stakeholders, both public and private, view maize as the priority staple crop for investment and intervention. It is a relatively new crop, having seen significant expansion in production over the very recent past as a result of substantial productivity and promotion investments by MINAGRI. The competitiveness and market capacity for commercializing maize are still evolving, while other crops, including beans and Irish potatoes have strong markets and producers with stronger historical linkages to trade. The market strength in these other staples provides financial incentives for the value chain participants to focus on minimizing post-harvest losses and improve handling to increase the quantity and quality of product that reaches the market.

There is a perception across the staple crop value chains that post-harvest losses are significant, but there is little available data. An ongoing effort from the GOR and its partners is necessary to quantify this issue at all levels of the value chain. Currently with maize, the limited size of the formal market demanding quality (and present constraints in production competitiveness) does not automatically equate to farmers being compensated for the investment required to minimize losses and improve quality through primary processing and handling.

Drying is most critical, both technically and economically, for cereals and legumes crops. Achieving a proper moisture level can stabilize the grain for further handling and storage, and can improve the milling quality. Field drying is the most economical, allowing the crop to naturally reduce moisture content upon maturation and prior to harvest. Rwanda is limited in this regard due to harvests during the rainy season. Use of the sun and air remain the most economical, particularly for very high moisture grain, which make technologies such as drying sheds and concrete drying grounds a natural next choice for producer and first aggregator level investment, although the grain remains exposed to pests, weather, and thieves. Since margins for the producers (and everyone along the value chain) remain thin, the economics of technological solutions for staples in relation to market price response must be calculated. In the rice sector there is installed mechanical drying capacity. Producers are found to prefer to expose their crop to some risk of loss in order to dry themselves, rather than take the price differential paid to compensate for the processor drying mechanically.

¹¹ The 2010 maize market estimates were generated by the consultant drawing on documents from MINICOM, the PHHS inception report, and stakeholder interviews.

The trade currently has little reason to discourage the sale of ‘wet’ commodities, and maize in particular. The main markets, the informal millers, simply are not demanding it. The traders do not take significant market positions, turning their stocks over relatively quickly. And the informal millers (and those utilizing the toll milling services) are also entering the market on a regular basis to purchase maize and sell the maize flour immediately. Most consumers accept the resulting quality and do not want to pay the premium for improved quality; an especially important consideration in staple foods, where a fundamental objective is consumer access to affordable food. There is a perception among decision makers and even the formal private sector market that additional storage is the key. But investment in handling technologies and facilities that are economically relevant (instead of storage) given the current trade norms should result in a return on their investment.

A variety of bag sizes are used in the region; 50 kg for WFP (who follows ILO), 90 kg in Kenya, 100 kg in Tanzania and 100kg+ in Uganda and Rwanda. The practice of over stuffing bags is commonplace where a bag with a tare weight suitable for 100 kg has significantly more grain inside – this over stuffing leads to the poly propylene strands pulling apart along seams. Grain falling out onto the floor attracts rodents and provides an easily accessible breeding ground for insects, which further increases the post-harvest losses. The reason bags are overstuffed is partly limited use of scales at the rural aggregating level, and the rationale that if the bag is full to bursting, then it is the right weight. Another side effect of over stuffing bags is the increase in broken grains. This is particularly prevalent in paddy rice, which if dried down to a suitable storage moisture level (under 13.5%) becomes more fragile. When a bag over 100 kg is hefted in and out of trucks, and stacks, the force as it falls, or other bags fall on it, is significant, breaking the grains inside and reducing the quality of the milled rice. Standardizing the use of 50 kg bags would lower this. Finally, bags of 90kg+ weigh more than the person carrying the bag – this can cause significant long-term injuries. This position is supported by the ILO and the EAC and is reflected in the EAC maize standard but not enforced. Industry players in the region agree with the policy but will not implement it until government regulates it, since they cannot bear the corresponding cost in the highly competitive staple trade where margins per unit are small.

Transport costs are a significant portion of total marketing costs.¹² A recent study quantified the marketing costs along the maize value chains in Tanzania, Uganda, and Kenya.¹³ This study found that **transportation costs accounted for 76% of the marketing costs**. Of that, “44% of average transport charges occur during the first 28% of the distance between farmers and urban wholesalers.” While Rwanda was not included in the study, transport costs may be assumed to be similar to elsewhere in the region.

Market information, while an important aspect of structured trade systems, does not automatically provide market access. Improved access to market information does not in and of itself provide incremental income improvements to any player in the value chain; rather, it helps stakeholders understand what their best options are for buying and selling and increases transparency and fair

¹² Marketing costs are all transaction costs between the farm gate and the final processor or retailer. Costs for significantly transformed products between the purchase by the processor and the consumer after processing may include inefficiencies within the processing itself and thus is not included as a marketing cost. It is useful to analyze the marketing costs between segments within the supply chain to identify where opportunities for improvement offer significant increases in efficiency.

¹³ Eastern Africa: A Study of the Regional Maize Market and Marketing Costs, Agriculture and Rural Development Unit, World Bank, December 2009.

pricing, thus enhancing market efficiency. Market information relates to primary information (crop forecasts, production, consumption, price data) and processed information – market trends, predictions etc. Primary data provision is a justifiable public good where the government uses its resources to provide accurate, timely, and relevant information both to its own departments and the private sector.

Market price information across the country, region, and world tracks certain markets. The South African maize market closely reflects the movement in prices on the trading floor of the Chicago Board of Trade; Ugandan prices track movements in the Kenyan Nairobi market. Prices across different markets in Rwanda will closely track for the most part the price in Kigali. Therefore since prices are only indicative, and can change every minute and every day – prices for markets outside of Kigali can be derived by knowing the transport cost per km (adjusted for fuel price changes). This means the number of price collection points can be limited to one or two markets (and occasionally checked to see if there are significant differences beyond what would be expected for transport costs).

In well-developed markets the private sector provides a number of services, which either provides processed information to paying subscribers, or uses the provision of processed information as a way of attracting customers to other services. Government can stimulate the development of processed information providers by commissioning private sector service providers to produce such information (potentially through the private sector cereals and legumes alliance) with the government reducing its contribution to the costs over time until it pays a subscription for the services along the same lines as other private sector players.

1.1.3 Producers and Farm Gate

The profitability of some staple crops remains hampered by low productivity. The CIP program continues to focus on reaching the target productivity levels needed for competitiveness and producer profitability. This National Post-Harvest Staple Crop Strategy intends to enhance producers' access to and linkages with markets to complement the gains expected from complementary productivity and competitiveness investments.

Rural producers are largely organized into product specific cooperatives, at the sector or cell level. These product specific cooperatives are aggregated into commodity unions, mostly at a district level. The unions are eventually represented in commodity federations at the national level. This is reflective of the cooperative development strategy, which is discussed further in the legal and regulatory framework and implementing institution sections following. At present there are only two functioning national producers' federations, FUCORIRWA (rice) and the Irish Potato Federation. The Rwanda Cooperative Agency (RCA) and the active cooperative unions are also developing a maize federation.

Producers have uneven access to formal structured markets and marketing services. Maize is seen as a priority crop for investment and intervention in part because producers do not have many marketing options. Other staple crops, including beans, Irish potatoes, rice, and cassava, tend to have traders who penetrate production areas for purchase. Cooperatives are uneven in their capacity to serve their members with relevant services. Some areas have strong NGO capacity building programs assisting cooperatives in developing and implementing aggregation and market linkage activities. Irish potatoes and paddy farmers have some of the strongest cooperatives and unions.

Some of the aggregation and handling models that the cooperatives are being strongly encouraged to adopt include significant off-farm handling investments, where all cereals and legumes produced by cooperative members jointly move through primary processing, including shelling, threshing, drying, and aggregating – even shorter-term storage – for volume marketing. If and when these models are adopted by cooperatives, food security implications need to be assessed; specifically the effect this may have on producer households' abilities to retain some staple food production for home consumption.

Storage for anticipated increases in market prices is speculation, though it extends farmers' choices of when to sell their crop. Producers and cooperatives need capacity building in understanding and managing the additional risk assumed through storage and speculation with credit. While there are some nascent programs in lending for cooperative speculation activities, the microfinance institutions involved expressed a capacity constraint, particularly in understanding, quantifying, and managing their associated commodity risk.

2. THE NATIONAL CONTEXT

Legal and Regulatory Framework

Rwanda is actively building the legal and regulatory framework for all sectors, including those relevant to staple foods, and the harmonization with the East African Community (EAC) since joining in 2007.

2.1.1 Consumers and End Markets

In 2007 and 2008, the prices of many staple commodities experienced a sharp increase, which surprised consumers and governments. While commodity prices have come down from the highs of that period, commodity prices are inherently volatile and governments globally are engaged domestically, regionally, and on the international level in dialogue regarding implications and strategies to assure consumers and vulnerable populations can continue to access grain at more stable prices. Strategic grain reserves have played a central role in these discussions.

Globally there has been varied experience with the utilization of government commodity stocks. They have been used in an attempt to mitigate local price volatility (both for the benefit of producers and consumers through the use of price bands), to prepare for quick responses to regional emergencies and crises, and to ensure that the local market has a minimum stock level of critical commodities. The use of strategic grain reserves should be predictable and transparent, allowing for private sector and market confidence. Government interventions should not replace or negatively impact the profitability of the private sector, which may result in a contraction of investment. With the recently renewed interest in the use of reserves, donors have commissioned useful analysis of previous experiences and best practices that can be leveraged by new reserve activities.¹⁴

In 2010, Rwanda initiated strategic reserve activities. The first year was modest and a learning experience. MINAGRI purchased approximately 7,000 MT of maize and 3,000 MT of beans from Season A production. The Post-Harvest Taskforce within MINAGRI had oversight and responsibility for the reserve activities and entered into agreements with private entities for storage and quality management services. While the value chain stakeholders are generally aware of MINAGRI's purchase and subsequent storage, there was no upfront communication with industry about a strategy for selling or releasing the grain. MINAGRI purchased the maize at a price established by GOR. (This price and the terms of purchase at this price by other purchasers are discussed further in the trade and industry section below.)

The 2011 Post-Harvest Taskforce implementation plan has indicated an intention to purchase 60,000 MT of maize and beans as a strategic food reserve for the coming season. The PH Task Force currently intends to continue to grow a strategic food reserve (based on maize and beans), potentially reaching 200,000 MT. The first year's strategy was designed as a learning experience, more focused on providing supportive farm pricing in support of production policy than specifically tied to any specific food policy or emergency food reserve. This is one critical issue to be addressed by this National Post-Harvest Staple Crop Strategy.

¹⁴ DFID and FAO have a strong collection of analytical and best practice documents:
<http://www.fao.org/es/esc/foodpriceswing/>

Rwanda's Bureau of Standards (RBS) is leading an effort to harmonize Rwanda's standards, which includes staple foods and commodities, with the EAC. This is being done with input from a technical committee that includes producers, cooperatives, traders, processors, and MINAGRI. They have completed the harmonization of 1,100 agriculture product and food standards with EAC. They use diverse technical committees in setting grades and standards, in an attempt to reflect actual quality levels traded in the market and accepted by the consumers. Improved quality that is not reflective of market norms can mean increased prices to consumers or reduced prices to farmers.

RBS has had to assume some enforcement role historically, though this is not in line with international best practice, which separates out the functions of setting and enforcing standards. To this end a Quality Policy was recently passed establishing a National Inspectorate Board for quality and safety oversight. RBS will continue to set the standards and to provide capacity building to key stakeholders on the standards, while the new National Inspectorate Board will have a mandate of oversight and enforcement. This is one example of the GOR's active moves to implement best practices and the evolving nature of the legal and regulatory framework.

2.1.2 Trade and Industry

The PSTA II, the overarching agriculture development strategy for GOR, outlines its implementation within a SWAp framework: a sector-wide approach. A SWAp is defined as an approach for coordinating expenditures in a functional sector where multiple Ministries, Agencies, and International Partners play funding as well as planning and implementation roles. While MINAGRI leads the coordination of agricultural development, there are many policies, as well as implementing and supporting institutions that contribute. This is especially true in the post-harvest activities of the staples value chain that start with on-farm handling as a product completes production and moves through the handling and transformation portions of various marketing channels to consumption. This National Post-Harvest Staple Crop Strategy intends to use this SWAp framework to coordinate and leverage the contributions of multiple policies and stakeholders within the public sector, private sector, and civil society.

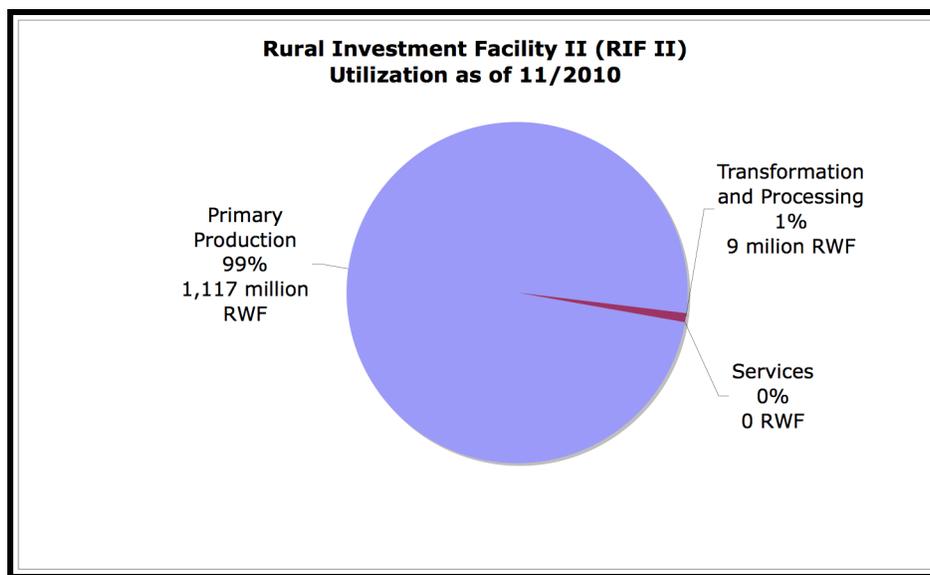
Rwanda has taken many critical steps towards building the soft infrastructure, the enabling environment and regulatory framework, necessary for private sector activity. Initiated through a business law reforms task force, a Companies Act, Business Registration law, Law on Insolvency and Law on Secured Transactions (both movable and immovable) have been passed by Parliament – as relevant to a robust private sector in staples value chains as in any other sector. Other relevant 'soft infrastructure' includes: the SME Policy, the development of the RDB as a one-stop shop for investor and entrepreneur services, a robust public-private dialogue calendar between relevant ministries and agencies and the Private Sector Federation (PSF), a varied financial incentive portfolio, and a focus on donor coordination, prioritizing economic growth and leverage of interventions.

Financial Incentive Mechanisms

There are many publicly funded financial incentive products available to the agriculture sector. For example, the SME development policy recommended that scattered funds be brought together under a subsidiary of the Rwanda Development Bank (BRD), called the Business Development Fund (BDF.) As of November 1, 2010, the National Bank, which had been managing both Phase Two of the Rural Investment Facility (RIF II) and the Agriculture Guarantee Facility (AGF) (as well as other funds not specific to agriculture), transferred their funds to BRD's BDF.

RIF II, a grant facility for longer-term investment projects, has completed its first 5-year phase and is currently in the second year of Phase Two. A third phase is anticipated, which would further reduce the incentive level offered. RIF II finances three categories of projects: I) primary production which receives between 20-25% of the loan as a grant (depending on project size, up to 10,000,000RWF); II) transformation and processing which also receives between 20-25% (up to 150,000,000RWF); and III) services, with a grant of 15%, up to 150,000,000RWF. RIF II utilization is at about 20%. The projects must come through partner banks who leverage RIF II on behalf of their clients. The grant is given in the final stages of the investment, if terms of the loan to that date are met. Of the 1,528 funded projects to date, the vast majority of the utilization has been for relatively small primary processing projects, as seen in Figure 4. Most creditors are individuals, though some cooperatives and companies have accessed the facility.

Figure 4: Rural Investment Facility (RIF II) Utilization



Unfortunately, many banks are not using RIF II. BNR convened a meeting last year with MINAGRI and partner banks to understand if the banks were rejecting a significant number of proposals that they were not seeing; were the projects simply not bankable. The response was that there simply were not many applications; the banks were not rejecting many applications, and had actually passed through the vast majority to RIF II administration. RIF II also has a TA component with MINAGRI and PSF to provide assistance in developing business plans. This technical assistance component will be implemented by BRD's consulting services group, Business Advisory Services (BAS.) However, as with most BDS within Rwanda, they lack specific agribusiness and agro processing expertise.

The Agriculture Credit Guarantee Fund (ACGF) is for both short-term and long-term activities, including micro-finance. The ACGF offers 30% guarantee for short-term loans and 50% guarantee for longer-term loans. The objective of the fund is to cover a portion of the lender's (partner banks) risk to lower the collateral requirements for commercial finance. The ACGF was initiated to support the coffee sector. It expanded to all of agriculture in 2005. The Fund has funding from the Government of Rwanda and the Dutch Government. The ACGF has over 13 billion RWF in committed lending. They are leveraging their funds (almost 3 billion RWF) 4 times. Coffee remains the majority of ACGF lending, at almost 50%. Transformation (which includes all agriculture

transformation, not just staples) is only 4.27%, 570,000,000 in lending committed. Of the banks utilizing the ACGF, BRD represents 75%.

The Business Development Fund (BDF) is a Rwanda Development Bank (BRD) subsidiary, but has separate and private management. The BRD has put in 3 billion RWF of its own funds (from its profits.) These resources are being leveraged as a separate guarantee facility. A promoter must put up 30% of a project with a maximum size of 300 million RWF. The BDF will cover up to 50% of the required collateral coverage, up to 150 million RWF. The BDF is working to secure additional resources to continue to expand the size of this program.

A donor supported post-harvest staples investment mechanism, the regional USAID-funded Market Linkage Initiative Project (MLI), has offered a 50% matching grant facility for private sector investment in staples post-harvest infrastructure. The response has been quite positive, with a number of applications from the Rwandan private sector (including processors, traders, and cooperatives.) This matching grant mechanism offers upfront financing, as opposed to RIF II which is triggered at the end of the project's lifecycle. This may indicate either a greater risk profile for handling, storage, and processing investments, as calculated by the private sector, or some borrower capacity issue, such as already being significantly over-leveraged and thus further constrained in their ability to assume additional debt.

Taxation Policy

All agriculture processing is required to pay 18% VAT tax except milk processing. The corporate income tax rate is 30% and is applied to all businesses, including cooperatives. Agricultural activities generating less than 12 million RWF are exempt from the corporate income tax. The tax code states that any company engaging in microfinance activities may be exempt from corporate income tax, but there is no anecdotal evidence of that being applied to in-kind input credit provision by the private sector via forward contracts.

Local taxes have been used in the past to tax staples and some disruption of commodity movements occurred in the rural areas. It is believed that specific taxes have now been centralized at the federal level in response to this issue. While the districts do still have the authority to collect tax it does not appear they are doing so in a way relevant to staple crops at this time.

Taxes should be straightforward, simple to understand, and evenly applied. Some agricultural commodity imports are subject to duties, though no import duty stands out as particularly high.

Two Policies Specific to Staples Post-Harvest – Rice Policy and Rwanda Grains and Cereals Corporation, RGCC (concept phase)

A specific policy to further develop the rice value chain was adopted earlier in 2010. There are a number of components with specific post-harvest and market implications.

The rice policy provides for sensitization and capacity building of farmers around quality and meeting certain minimum quality standards. It also identified a need to facilitate labor access at critical production (and harvest) points as well as incentives and capacity to decrease labor needs through mechanization.

In an attempt to facilitate market transparency, the policy intends that specific accessible coops with storage capacity will be identified as formal collection centers and RBS will monitor and enforce

quality standards. The policy also includes a provision for the establishment of a minimum paddy price each year, set at to the collection center level. Paddy traders will be registered. Additional investment in market access roads is also planned.

The rice policy also regulates milling by banning specific inefficient rice mills, with RBS monitoring and enforcing minimum milling grades. Distributors and retailers would also be registered. Additional investment promotion incentives are to be offered (specifics have not been identified within the policy documents) to encourage additional milling capacity investment.

Finally the policy identifies the importance of advocacy at the regional market level via EAC forums to oppose hidden competition in the policies and frameworks of neighboring countries and the monitoring of regional trade policies and macro-economic conditions on behalf of Rwandan producers and consumers.

The second staples post-harvest regulatory policy is still in the concept phase. The Rwanda Grains and Cereals Corporation (RGCC) is proposed to:

- establish a structured grain and cereals trading system through grain collection and storage centers
- stabilize farm prices
- support heavy investment in physical infrastructure (hoping to incentivize future private sector investment)
- purchase farmer production at predictable prices
- build and manage silos (and drying facilities)
- incorporate all key stakeholders including public and private sector (and aligned parastatals)

The East Africa Grains Council (EAGC) would be a critical partner within the proposed RGCC. The concept has been reviewed by the Rwandan Cabinet, but has recently been moved from MINICOM to RDB for further development.

Livestock Industry Development

The cornerstone livestock industry development project is the Girinka Program, the One Cow per Poor Family program. The Girinka program was approved as one of the implementation measures for Vision 2020, EDPRS and IDP. It aims to enable every poor family to access a dairy cow for income, nutrition, and organic fertilizer. The Rwanda Animal Resources Development Authority (RARDA) leads the implementation of the Girinka program.

Small-scale dairy cattle though are not the solution for all poor Rwandans, particularly given the size constraints on land plots. Although competitive concentrated feed would assist in the continued expansion of Girinka to families with serious land constraints, the dairy industry alone is unlikely to drive the development of a concentrated feed industry.

RARDA is approaching the need to diversify small holder livestock models and the development of a concentrated feed industry from two directions. First RARDA intends to continue to develop alternative production models in small ruminants (sheep and goats) as well as non-ruminants (hogs

and poultry) for smallholder producers. This will allow the smallholder producer unable to enter dairy production to benefit from livestock. Secondly, RARDA has indicated they are starting to develop a poultry industry development strategy to not only the smallholder poultry producers, but also the commercial poultry industry. This should expand the concentrated animal feed industry, both at the centralized level in Kigali, but also provide opportunities for medium size animal feed investments in some Districts. The development and implementation of a poultry industry strategy by RARDA is particularly relevant for cereals and legumes post-harvest investments as this may offer opportunities for sources of local market demand.

Decentralization

In 2007, a strategy was developed to guide the implementation of the National Decentralization Policy, which was adopted in 2000 as one of the most critical overarching strategies for local staples value chain development. One strategic objective is to develop sustainable economic planning and management capacity at local levels that will serve as the driving motor for planning, mobilization and implementation of social, political, and economic development to alleviate poverty. This framework places the District and Sector leadership in critical leading roles with regards to prioritization and implementation of economic development related activities in partnership with local producers, cooperatives, and the private sector.

2.1.3 Producers and Farm Gate

Crop Intensification Program

The Crop Intensification Program (CIP) is a cornerstone program for staples food activities within MINAGRI and the GOR. Launched in 2007, CIP was a pilot program with the goal of increasing agricultural productivity in high-potential food crops and ensuring food security and self-sufficiency. CIP activities include bulk buying of inputs by GOR, training of district and sector extension agents who provide farmer interface as a result of decentralization policy in improved production practices and the use of improved inputs, and the subsidized provision of inputs (with subsidy rates reduced in a stair step manner each year) and credit for input purchase. CIP post-harvest activities include promotion and provision of hermetic storage at the community level, organization of markets, collection and dissemination of market information, and credit facilitation.

Earlier in 2010, a Post-Harvest Task Force was created within MINAGRI (led by the CIP manager) to push forward the post-harvest activities; principally making investments in construction of communal drying grounds and storage structures coupled with procurement of various types of equipment such as cleaners, winnowers, graders etc. for farmers within the districts.

Land Use Consolidation

The Land Use Consolidation policy intends to consolidate agricultural land use in order to improve land management and productivity. Land use consolidation has been defined as the process whereby agricultural production efforts of individual landholdings and smallholder farmers are “integrated, coordinated, or facilitated to achieve a unified production structure characterized by collaboration in types of crops grown, inputs supply and distribution, processing of agricultural products, and/or distribution and marketing of agricultural products.”

There are three models identified for implementation (with the key stakeholders participating in the choice of model): facilitated contract farming, cooperative farming, and joint corporate farming. The policy framework leaves open the possibility that other land use models may be developed and implemented. The policy includes a commitment to remain market oriented and that MINAGRI will provide appropriate incentives and subsidies to encourage voluntary participation and retention of support throughout the consolidation process. The land use consolidation policy is the basis for MINAGRI's crop production plans, where MINAGRI identifies consolidated production areas and pre-plan the year's production of key CIP crops and advising the farmers of the production plans for their lands and providing complimentary support (CIP incentives, extension support, etc.) The implementation of this strategy directly affects the supply of staple foods produced.

Agriculture Extension

The Agriculture Extension Strategy was elaborated in early 2009. The Extension objectives are:

- to promote farmer organizations and to encourage their participation in agricultural sector stakeholders "concertation" platforms
- to strengthen technical capacities of producers
- to improve services delivery to producers in the perspective of gradual disengagement of the public sector from extension service delivery
- to promote a system of participatory research adapted to the needs of producers

The delivery of extension is managed and coordinated at the level of local government administrations, according to their pivotal role laid out in the decentralization strategy. The extension team, now reporting locally and not federally, will continue to form the link with the farmer for delivery of information, capacity building, and research services. The extension strategy reaffirms the critical role of producer organizations, NGOs and civil society, and the private sector in facilitating and delivering producer required extension services; which are all coordinated by the Districts.

Rwanda Cooperative Agency (RCA)

The Rwanda Cooperative Agency, a part of MINICOM, began operations in 2009 and promotes, registers and regulates cooperatives as outlined in the Cooperative Policy. The law governing cooperatives was passed in 2007. Cooperatives are seen as a means of people taking responsibility for their own development. In the agriculture sector, commodity specific cooperatives are typically organized at the sector level, with cooperative unions formed at the district and regional level, culminating in representation in a National Federation. A separate structure of grassroots savings and credit unions (SACCOs) are being developed, again starting with the sector level and confederated into unions at the district and regional levels. This is still a very new structure. A limited number of SACCOs are being linked to commodity specific cooperatives as a means of leveraging the finance within the SACCOs for inventory credit. The RCA provides assistance in initial organization and set-up (including registration), administration, capacity building, and audit services to cooperatives. These services are coordinated at the district level.

Implementing Institutions

The decentralization strategy, outlined above, provides the framework through which the implementing institutions operate. The Districts and Sectors play critical leading roles in strategy and policy implementation with the federal institutions transitioning to service provider and technical advisory structures.

2.1.4 Consumers and End Markets

There are social safety nets for especially vulnerable populations in the rural areas that are managed by the district and sector administrations. These programs provide cash support payments that are most likely used for critical purchases, including staple foods.

Rwanda Bureau of Standards

The Rwanda Bureau of Standards (RBS) is responsible for ensuring that all products on the market are safe – to protect the health of the consumer; and secondly to promote grades and standards which facilitate trade. RBS has the mandate to set relevant standards, and provide training and sensitization for key stakeholders. Although they have some resource limitations to reach the full value chain with these services, they are starting to reach segments of the cereals and legumes informal sector, in a limited fashion. RBS has established a positive working relationship with the formal private sector, including both processing and trading. They have provided limited capacity building and sensitization directly to cooperatives and through extension agents. These linkages and RBS' capacity to leverage key intermediate stakeholders, both public and private, for enhanced training, sensitization and compliance with grades and standards, could be significantly enhanced.

Until the Quality Policy is fully implemented, RBS continues some enforcement role. In mid-2010, RBS visited some Kigali based informal small maize mills. Twenty were found to have serious enough food safety and contamination issues to have operations suspended. Clear guidance was provided by RBS at the time about the standards infractions and steps that would need to be taken to meet minimum standards. Within a few months of suspension, half of the maize mills had made the necessary investments and modifications to process to reopen. In the future the National Inspectorate Board will assume this role, while RBS will provide the training and capacity building to the businesses around meeting the standards.

2.1.5 Trade and Industry

Ministry of Local Government

The Ministry of Local Government (MINALOC) is responsible under the decentralization policy for transferring powers, authority, functions, responsibilities and the requisite resources from central government to local governments or administrative divisions. MINALOC is a critical partner in supporting the District and Sector leadership in executing their roles in prioritizing economic development strategies and activities for their constituents and coordinating program implementation and service provision of other Ministries. As agriculture remains the main economic activity in most of the sectors and districts, MINALOC is an important implementing institution for staples value chain prioritization and development, as are the district and sector leaders themselves.

Ministry of Trade and Industry

Ministry of Trade and Industry (MINICOM) has a strong relationship with the formal trade, logistics and transport, and processing sectors. The relationship is viewed as collaborative and supportive by the private sector, and MINICOM has facilitated additional finance and dialog opportunities where identified as critical for the formal staples processors. They have a key role to play in continuing to move the informal sector into the formal sector. The formal staples private sector remains limited in size, but once the industry defines their shared industry vision MINICOM is a natural partner, for collaborative promotion of expanded investment and increased competitiveness. MINICOM appears to have sufficient capacity to expand their engagement in supporting the objectives and implementation of a coordinated staples post-harvest strategy.

Rwanda Development Bank (BRD)

The BRD's mission is to finance Rwanda's development objectives, in priority sectors, including agriculture. Among Rwanda's banks, the BRD is the largest user of the RIF II financing facility and played a critical role in the expansion of investment in the coffee sector. The previous legal and regulatory framework section discussed their subsidiary, the BDF, in more detail. In addition, the BRD provides business consulting and technical assistance through the BAS, Business Advisory Services. They lack specific agribusiness and commodity trading expertise that could be useful to both cooperatives and other private sector seeking consulting services.

Rwanda Development Board

The Rwanda Development Board (RDB) is an independent agency. It reports directly to the President and is guided by a Board that includes all of the key Ministers, including finance, commerce, infrastructure, and agriculture. The RDB is a one-stop shop that brings together all the government agencies responsible for the entire investor experience under one roof. This includes key agencies responsible for investment promotion, privatization and specialist agencies, which support SMEs and human capacity development in the private sector. The RDB has the capacity to assist in the development of business plans and conduct feasibility studies to encourage additional investment and industry expansion. They are currently working with the Districts to conduct feasibility studies for investment promotion in priority agriculture value chains, as identified by the Districts.

Other critical Ministries and Agencies relevant to the enhancement of competitiveness and expansion of the staples value chain are the Ministry of Finance and Economic Planning (MINECOFIN), the Rwanda Revenue Authority (RRA), the Ministry of East African Community Affairs (MINEAC), and the Ministry of Infrastructure (MININFRA.)

2.1.6 Producers and Farm Gate

As noted in the previous sections, the Sector and District Governments play a critical role in leading and coordinating activities and programs.

Ministry of Agriculture and Livestock Resources (MINAGRI)

MINAGRI is composed of a number of autonomous units, including RADA, RARDA, and ISAR.

The MINAGRI Post-Harvest Task Force sits outside of these units and reports directly into the overarching MINAGRI administration, with representation from the RADA post-harvest unit. The PH Task Force is very new, having been created just a few months ago. They are led by the CIP

manager and initiated the first experience with a strategic grain reserve (as outlined in the above market context section) as well as initiating investment in primary staples processing infrastructure in maize (drying grounds planned for the coming 2011A Season.)

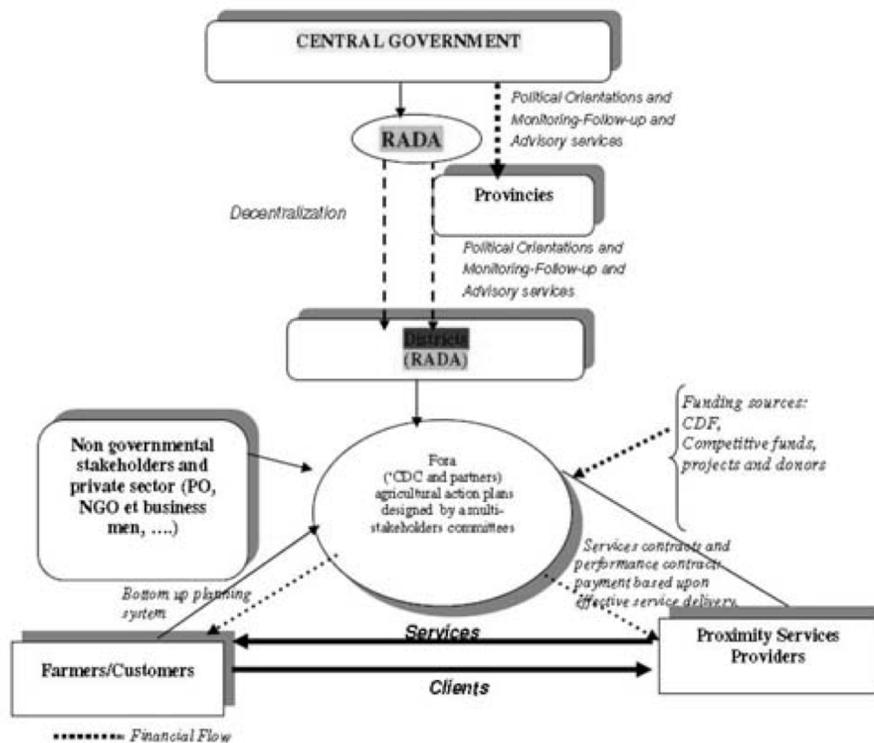
Rwanda Agriculture Development Authority

Rwanda Agriculture Development Authority (RADA) is designed to support entire agricultural value chains within Rwanda, except livestock, horticulture, coffee, and tea, which have their own institutions. RADA coordinates the local production, purchase, and distribution of seeds. As a result RADA is an important buyer of staples production. Many of the strongest cooperatives in maize and wheat, for example, produce seed (or grain to be used as seed) for RADA purchase.

In addition to seed and post-harvest units, RADA has soil and water management (focused on erosion control and hillside agriculture), crop production (including fertilizer programs), crop protection, and a separate rice production unit.

Implementation of the Extension Strategy described in the above legal and regulatory framework is also led by RADA and outlined in Figure 5 below.

Figure 5: Process in the Agricultural Decentralized Extension System (RADA)



Rwanda Agricultural Research Institute (ISAR)

ISAR leads the research in agronomy, animal and environmental sciences. It has a unit dedicated to post-harvest activities, principally focused on producer, cooperative, or small-scale entrepreneur processing technologies. The ISAR Post-Harvest (PH) unit has a staff of five food scientists, with three currently out of the country pursuing advanced degrees. It is engaged in staples research and

capacity building as related to specific food applications, including cassava and Irish potato products. The PH unit does not have any agriculture engineering expertise that can prioritize the evaluation and adaptation of primary handling technologies, such as threshing, shelling, winnowing, and drying of cereals and legumes. The PH unit also lacks any expertise in human-centered adaptive design or economic analysis capacity that could be useful in developing sustainable commercialization strategies for identified appropriate technologies for scalable adoption by value chains. Their capacity to engage directly with many cooperatives is also constrained by staff capacity.

RARDA has been discussed in the previous legal and regulatory framework section.

Rwanda Cooperative Agency

The RCA (Cooperative Agency) has been discussed in some depth in the previous legal and regulatory framework. The RCA is a critical partner in their role of providing capacity building to the producer cooperatives. They do not have the technical capacity to fully understand the commodity marketing models being pursued by the cooperatives and partnerships should be strengthened so that the cooperative administration and transparency are properly understanding and reporting their risk exposure and recommending risk management approaches, for example professional liability insurance.

Supporting Institutions

2.1.7 Consumers and End Markets

Consumers purchase their staple foods from organized retail, more traditional markets, and at times directly from producers or small processors. The formal processing private sector, as noted earlier, is limited and operating under capacity. They have limited brand development and are often selling bulk to wholesalers who will most likely break down the volumes into smaller retail quantities. Sosoma is one example of a formal processor that does have brand recognition and has been investing in product development and consumer targeted brand development.

2.1.8 Trade and Industry

Formal processing

The formal processing of staple crops is limited to a handful of companies (and most are in maize, paddy rice.) Their infrastructure sophistication varies, but the industry is operating significantly below capacity. No formal maize processor has functional mechanical drying capacity installed (though there are now plans for investment as a result of the previously mentioned USAID funded MLI matching grants program.) The maize investments mostly occurred to meet local maize flour demand by relying on the processing of imported maize, which arrives in a stable state. This lack of drying infrastructure is one issue that needs to be further overcome for the local processors to continue to shift to local production. There is one bean processor. Cassava has a slightly higher number of processors, but they are all small. Drying is also critical in the cassava processing industry.

Cereal processors typically buy the majority (even 70-80%) of their raw commodity needs at harvest. This allows the processor to lock in their cost of goods sold, but requires large amounts of affordable working capital as well as inventory warehouse space. In Rwanda the requirements are somewhat lower given multiple rolling harvests and regional trade, but working capital constraints are still a concern for the formal and informal maize (and other cereals) processors. Given the

availability of financial incentive mechanisms, it is clear that underlying business constraints exist that are inhibiting their ability to capitalize on the mechanisms (for example, the business is overleveraged and not able to assume additional debt load for working capital.)

Within Rwanda, the small formal processing sector also lacks access to agribusiness consulting services with relevant commodity trade and processing expertise. Capacity to manage the associated commodity risks is uneven across the enterprises.

As noted above, the animal feed industry is not fully developed due to an absence of a developed non-ruminant livestock production industry. There is significant installed capacity, some of which is occasionally utilized for processing maize to meet structured demand contracts for human food (sold to WFP tender.) The capacity utilization should improve as the livestock industry develops. The animal feed sector must be considered a part of the staples food value chain, which is not the case in Rwanda today.

Informal Processing

The informal processing sector appears to have penetrated most regions of Rwanda, with hammer milling businesses. These businesses do some of their own purchase, processing, and retail of staples flours (maize, bean, cassava) but often run their businesses based on toll milling services – both for small traders (mostly women), as well as consumers and producers directly.

Traders

Traders play critical roles of aggregation, finance, and arbitrage (moving commodities between areas of supply and demand.) Smaller traders provide market linkage services as they penetrate into production areas. There is a nascent traders association in Kigali that has secured land for a new commodity trading and warehousing facility, and has already secured commercial finance. Most of the member traders already have good relationships with commercial lenders and backward linkages with smaller traders sourcing from producers. These traders also facilitate the regional import and export of commodities. RBS works with them for input into grades and standards process and enforces health and safety regulations.

Financial Institutions

There is a strong banking sector within Rwanda. One bank in particular, BPR (Banque Populaire), has a good reach into the rural areas and a specific interest in agriculture. With Rabobank (a Dutch cooperative bank with strong agricultural lending expertise) a significant shareholder, BPR has an agriculture lending department. BPR leverages about 19 different credit facilities from NGOs or the public sector on behalf of their clients, mostly in agriculture. RIF II loans make up about 17% of this specific credit facility portfolio (this figure includes all agriculture sectors and does not represent staples specific lending.)

This agriculture lending expertise, though, does not extend equally through all of the banks. The banks typically report a lack of bankable projects, not a lack of capital or access to appropriate concessionary financial mechanisms. The financial sector also suffers from the lack of agribusiness and specific agro-processing expertise in the consulting and advisory services sector. Business planning services are lacking at the local level – little understanding of strategic planning, analysis of strengths and weaknesses, and constrained capacity to play out different operational scenarios.

The microfinance institutions are the other main players in the staples value chains and are starting to enter the provision of inventory credit, through cooperatives. The MFIs consulted expressed concern at their own capacity to understand the associated commodity and market risk that they were assuming. The MFIs are aware that inventory credit is offered in other markets, but reported little to no exposure to those experiences or best practices to learn from.

PSF (Private Sector Federation)

PSF is an overarching organization representing a federation of 12 sector Chambers. They have a strong calendar of advocacy opportunities with many relevant ministries and agencies of the GOR, but reportedly the agriculture chamber is relatively weak. The formal staples processors are reasonably active within the Chamber of Industry, including holding leadership positions. PSF and RRA hold a quarterly Tax Issues Forum, which is part of the PSF's public dialog and advocacy calendar. PSF also has a quarterly working dinner with MINICOM. An annual meeting between PSF and the President is also convened. There are apparently no scheduled meetings with any part of MINAGRI.

While cooperatives are theoretically viewed as private sector entities, and are subject to the same corporate income tax structure (should they develop strong business models generating revenue and profit), they do not have representation within PSF. This means that a critical piece of the agriculture value chains are not participating in what is meant to be a comprehensive private sector representative body. PSF lacks linkages with cooperatives, in part due to their lack of representation and the relatively weak agriculture chamber generally. A confederation of federations is expected have a membership seat within the PSF, but strong cooperatives, unions, and federations should also participate within the appropriate Chambers to strengthen the relevance to the staples industry. PSF has a BDS operation, with external (including public) funding support. This BDS operation is intended to provide capacity and consulting services to both SMEs and cooperatives, as well as assist with linkages to finance.

The agriculture industry appears to only gather when convened by GOR, and typically across single value chains (and the livestock feed industry is not typically invited to cereals meetings.)

2.1.9 Producers and Farm Gate

A number of staples cooperatives are gaining capacity and experience, having been organized a number of years ago and received some technical assistance and capacity building from donor programs, NGOs, or GOR. But cooperative capacity remains varied and many lack strong market service models. Most commodity cooperatives enable input acquisition and delivery for their members and partner with extension services; they are largely production-focused activities. There are a few cooperatives now being trained and linked with formal processing and structured demand markets, including WFP. But no examples of linkages between cooperatives and traders were identified. Traders continue to purchase directly from individual producers, particularly in the cereals and legumes markets.

Building cooperative capacity requires a long-term investment and should be founded on an economically viable market service (or trading) business model. The union level may be the most appropriate level at which to launch trading enterprises. One with some prospect of success has started in Gitarama – where a number of cooperatives united to form an input supply retail operation to service the market (most of the sales are not to cooperative members, but the general public.)

The profits and cash flow will be utilized to launch a commodity trading operation, focusing on cooperative production. The staff have trading backgrounds and existing trading contacts both within Rwanda and in regional markets like DRC and Burundi. Lessons from this experience, that is commercially focused with specific hired trading expertise but happens to be cooperatively owned, may provide models for other cooperatives to replicate.

NGOs

There are many international and local NGOs operating within Rwanda. Some NGOs are contracted by GOR as service providers to producers and cooperatives, including in production extension and post-harvest (including marketing) support. NGO activities are coordinated at the District level. Post-harvest capacity, technologies, and processes are found within the NGO operations. The access to these technologies and these capacities is limited to the NGO's reach and mandate/budget. NGOs also often do not have sufficiently commercial motives to fully commercialize useful technologies that have significant scale potential. Mining these capacities, technologies, and processes, as related to primary processing and handling activities, could yield significant material for commercialization for the benefit of a larger number of Rwandan producers.

3. REGIONAL AND INTERNATIONAL CONTEXT

The grain trade in Eastern Africa mostly follows the central and northern transit corridors with the bulk of the grain trade moving along the northern corridor towards Kenya which has a significant deficit in beans and rice and a small deficit in maize. The economic growth in Kenya has generated the buying power to cover the expense of moving commodities large distances – for instance beans from Southern Tanzania to Nairobi. The higher level of purchasing power has also allowed the Kenyans to develop preferences – for instance for different single variety beans. So Rwandan mixed beans move into the Ugandan market, and Uganda produces single beans, which move into the Kenyan market. Distance from the consuming market is a significant factor in the competitiveness of any staple moving along these supply chains. While Rwanda has an advantage to access the markets in DRC, it is at a disadvantage to Uganda for moving maize into the Kenyan market. Other factors that affect competitiveness are the productivity level at the farm, the cost of the inputs that are used (which in the case of fertilizer have had to be imported through Mombasa and so already have a high transport cost component), and the efficiency of the aggregation of commodities into tradable volumes.

Key Institutions and Frameworks

EAGC was established by the private sector to represent grain farmers, traders and processors and their related service industry players. It has offices in Kenya, Uganda and Tanzania and is interested in working with the Rwandan players to establish a Rwandan chapter which would have its own strategy and objectives but linked to improving structured trade in country and regionally.

As noted previously, Rwanda joined the East African Community in 2007. The EAC is working to liberalize and promote regional trade. There is a specific EAC interest in developing and enhancing regional commodity trade for food security across the countries. An external tariff structure on cereals has been adopted to promote production.

The Economic Community of the Great Lakes Countries includes Rwanda, Burundi, and DRC. While it was started in 1976, it was only recently revived in 2007. As noted in the trade data in the previous section, DRC is a major export market for Rwanda, particularly in staple commodities.

Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA; a COMESA affiliated agency) intends to document these on one of its information sharing platforms.

4. NATIONAL POST-HARVEST STAPLE CROP STRATEGY

Vision

The National Post-Harvest Staple Crop Strategy is a policy framework that will assist with strengthening the harvesting, post-harvest handling, trade, storage, and marketing within staple crop value chains in Rwanda, in an effort to improve markets and linkages for farmers, and reduce post-harvest losses. The Strategy's fundamental vision,

'to reduce food insecurity through an efficient post-harvest private sector system delivering staple foods to the people of Rwanda,'

has been guided by the Government of Rwanda's Vision 2020, EDPRS, and PSTA II.

The National Post-Harvest Staple Crop Strategy will support farmers capture income potential from increased productivity and competitiveness resulting from complimentary investments, including CIP. This requires engagement across ministries, institutions, agencies and stakeholders along the supply chain resulting in a "win-win" for producers, trade, industry and processing, and consumers.

Objectives

By focusing on post-harvest development, the policy recommended here aims to:

- Strengthen food security among rural staple crop producers
- Improve consumer access to safe and affordable food
- Support the private sector to invest in strengthening the competitiveness of the staple crop value and supply chain
- Improve the efficiency and decrease the marketing costs along the staple crop value chain
- Enhance producers' access to markets

Guiding Principles

The guiding principal of this Strategy is to leverage, build and align with the SWAp mechanism for increased inter-ministerial coordination with respect to funding and actions that benefit the agriculture sector. This strategy identifies seven Strategic Axes of Interventions detailed below.

Strategic Axes of Intervention

1. Information available for public and private sector decision making
2. Efficient and equitable transport systems across staple crop producing areas
3. Reduce staple crop post-harvest losses at producer and first aggregator level
4. Strengthen private enterprise in staple crop value chains
5. Increase private sector post-harvest investment

6. Enhance structured staple trade
7. Transparent strategic grain reserve supporting food emergency needs and liberalized markets

4.1.1 Information available for public and private sector decision making

The overall target outcome for this axis is *increased investment in staple crop business and increased turnover*. In order to achieve the goal of this axis, the following sub objectives will be pursued:

1. Strengthen basic data system
2. Private sector generating market intelligence

The delivery of this component of the Strategy will be led by MINECOFIN with support from MINAGRI and MINICOM.

Accurate and timely staple crop production data, consumption data and market price information is critical for informed decision-making both by private and public sector decision-makers. Data should capture as an absolute minimum the following: staple crop production, volumes retained at the household level for family consumption, household consumption patterns and income/price elasticity's, volumes sold through cooperative marketing, and quantities sold through market channels (informal traders and formal buyers.) Consumption preferences range within a diverse basket of staple foods and substitution between different staple crops due to seasonality, price, and/or availability need to be better understood. Animal protein consumption across the population is also of relevance to the cereals and legumes value chains, particularly as livestock production can be a key stabilizing factor in these markets.

To improve the basis on which to understand the sector and therefore make better decisions, the public and private sector capabilities will need to be strengthened. The development of a regular mechanism to quantify data and address the gaps identified is essential. This is best undertaken by the National Institute of Statistics (NISR) with support from MINAGRI, MINICOM and private sector industry alliance. Systems such as ESOKO (sms market price system) within MINAGRI could play a role in price data capture and analysis.

While an important aspect of a structured trade system, market information does not automatically create market access, reliable market information can make a real contribution in terms of increasing transparency and fair pricing determination. Market information relates to both primary information (crop forecasts, production, consumption, price data) and processed information (market trends, predictions etc.) Primary information provision is a justifiable public good where government uses its resources to provide relevant information (accurate and timely) both to its own departments and also the private sector.

Tasks will therefore include the identification of relevant data, information sources and gaps in knowledge, the establishment of methodologies and mechanisms for data collection as well as analysis and the development of an information library. Data collection, gaps in knowledge will require ongoing review. An important component of the Strategy will be to support the private sector to analyze and offer market intelligence services.

4.1.2 Efficient and equitable transport systems across staple crop producing areas

The overall target outcome for this axis is *reduced transport costs*.¹⁵ In order to achieve the goal of this axis, the following sub objectives will be pursued:

1. Investigate transport component of staple crop marketing costs
2. Reduce road transport costs between production and secondary aggregation points in high potential areas
3. Address prioritized ‘soft’ constraints

The delivery of this component of the Strategy will be led by MINICOM with support from MINALOC, MININFRA, MINAGRI and MINECOFIN.

The value of ongoing government investment in rural feeder roads, and national feeder roads in terms of staples competitiveness is vital and even more relevant than electricity for less perishable and low margin commodities. Marketing costs for cereals and legumes are dominated by the cost of transport; with the first few kilometers off farm being the most critical, and developing efficient and equitable transport systems across staple food producing areas will greatly contribute to competitiveness, economic growth and improved resource use. With this in mind reducing road transport costs between production and secondary aggregation points in high potential areas will impact positively on food security objectives.

By quantifying the cost of transport and its percentage contribution to marketing costs along the staple crops value chain, the total costs along the different parts of the supply chain from producer origin regions can be compared on a cost per kilometer basis and identify prioritized opportunities for road and infrastructure investments needed. At the same time ‘soft’ costs (such as delays on the road) can be identified and addressed. This can lead to an improvement in transport efficiency and reduce transport costs between production and secondary aggregation points in high potential areas. This information would be reviewed annually with cost data collected and disseminated via the data information system. The data can also be used to evaluate the effectiveness of the infrastructure investment.

The delivery of this component of the Strategy will be lead by MINICOM with support from MINAGRI, MINECOFIN, MININFRA, and MINALOC. Activities will include the quantification of marketing costs and the proportion of this that are transport costs from multiple districts and production areas so as to help assess the cost-benefit of infrastructure projects. Annual or biannual updates of transport cost collection and analysis can be feed into the data information collection system to assist in the prioritization of rural access road rehabilitation and construction, and addressing non-road building constraints, that can increase staple crop competitiveness.

¹⁵ The establishment of some critical targets will occur within first 8 months of implementation, based on outputs from related sub objectives collecting and analyzing critical data; in this case sub-objective 2.1.

4.1.3 Reduce Staple Crop post-harvest losses at producer and first aggregator level

The overall target outcome for this axis is a *reduction of post-harvest losses at producer and first aggregation level*. In order to achieve the goal of this axis, the following sub objectives will be pursued:

1. Build ISAR's Post-Harvest Team capacity
2. Identify and prioritize list of economically relevant post-harvest technology
3. Disseminate and promote the uptake of technology
4. Reduce post-harvest losses

The delivery of this component of the Strategy will be led by MINAGRI with support from MINICOM.

Improved producer and first aggregator post-harvest handling requires strengthened research capacity to develop new as well as leverage and adapt existing economically relevant technology and process solutions. A research and evaluation agenda is relevant when training and dissemination for 'solution' adoption is linked with 'solution' market development and commercialization.

PSTA II outlines a sub-program (II.2.3) related to the alignment of research with farmers' priorities, strengthening ISAR's capacity to respond, and linking research and extension to deliver services to farmers. ISAR currently lacks the capacity to respond, most critically in the staples primary handling activities, which occur at the producer or first aggregator level. ISAR is currently staffed by food scientists and has no agriculture engineering or human-centered innovation expertise. In addition to agriculture engineering capacity, the research team must be enhanced with economics expertise to assist not only in the evaluation of potential technologies, but also to build commercialization strategies.

NGOs operating within Rwanda (and the regional) are utilizing some potentially interesting technologies and processes, for example household sized maize drying sheds and the small-scale crank sheller. At the regional level, ACTESA intends to document these on one of its information sharing platforms. The Post-Harvest Team within ISAR, with support from the extension teams, should be actively identifying and evaluating the relevant technologies, and developing strategies to scale farmer and industry knowledge to drive adoption and access beyond the technologies' current limited scope. A technical steering committee will guide and mentor the ISAR Post-Harvest team in developing, implementing, and evaluating their research and commercialization plans.

As noted in the PSTA II, extension agents should be key partners with research as facilitators for in-field trials and training in identified technologies. The extension teams would receive training and be deployed as farmer trainers and market development agents once identification of technologies and processes has occurred and commercialization strategies have been developed. GOR purchase and installation of technologies (ie. drying grounds, shellers, warehousing) would be for technology evaluation and validation, demonstration, training, and market development purposes only.

When a farmer learns of a new process or technology, the technology must be easily accessible for purchase by the producers, cooperatives, first aggregators, and potentially even post-harvest labor.

Commercialization strategies will be developed for identified technologies that include market development, private sector partner identification and technology transfer, and appropriate financial models, partnerships, and linkages. Where relevant, a review of existing GOR policies that may hinder commercialization should be assessed and changes recommended where appropriate (ie. use of plastic in packaging or storage.) Development of these commercialization strategies may require short-term external expertise on an as needed basis.

Field days (and other extension models) can be leveraged to introduce, market, and train producers and primary aggregators on identified tested technologies and processes. Distributors, retailers, and credit providers would also participate in the field days to facilitate acquisition and provide further relevant information, according to the commercialization strategy outlined for each technology.

4.1.4 Strengthen private enterprise in staple crop value chains

The overall target outcome for this axis is *increased investment in staple crop businesses and increased turnover*. In order to achieve the goal of this axis, the following sub objectives will be pursued:

1. Empower the private sector to support the delivery of staple foods to the market
2. Transfer skills to all enterprises involved in moving staple grains into markets
3. Sufficient storage available throughout the supply chain for harvested staple grains

The delivery of this component of the Strategy will be led by MINICOM with support from MINAGRI and RDB.

In a liberal market improved market access will result from increased industrial use of staple foods and transparent links through the supply chain from the farmer to the processors and on to the consumers. Private sector industry needs to lead the expansion of the staple value chains, which includes investment in production, trade, handling and logistics, processing, information, and markets. A platform (which is most likely to be a member based association) is needed for the cereals and legumes players, and the tuber players with membership made up of farmers and farmer cooperatives, traders, processors including animal feed covering both formal and informal players as well as grain service providers (such as banks, transporters, etc.). The platforms would gather on a regular basis to develop a shared industry vision; advocate, both domestically and regionally; and drive value chain efficiency and expansion.

A calendar of public-private dialog developed on a quarterly basis should include all of the relevant ministries including but not limited to MINAGRI, MINICOM, MINALOC, and MINEAC. PSF and EAGC are natural convening forces that may be leveraged and engaged. RDB has a mandate to assist with investment promotion and industry expansion, thus a natural partner for the alliance once a shared industry vision has been established. The platform should be represented in the Agriculture Sector Working Group and the PHSCS Advisory Committee and can assist with and benefit from production, consumption and market information work.

The Government should not provide the direct support needed to establish this platform, but facilitate and encourage a third party agency probably through a development project to provide needed assistance.

To strengthen the staple supply chains it is essential to support capacity building across the staples private sector, both the informal and formal players but also providing additional agribusiness expertise to the support agribusiness services (for example BDS providers, finance providers etc.) as well as within capacity building initiatives, including BRD's BAS. As the capacity of the private sector agribusinesses increases, their business models will require the upgrading of their facilities, which will include additional storage capacity¹⁶ and investment in additional milling, processing and other value added activities.

Under this axis the Government would not provide the direct support needed to achieve the objective and the sub objectives, but facilitate and encourage third party agency/s probably through development projects to provide needed assistance.

4.1.5 Increased private sector post-harvest investment

The overall target outcome for this axis is *increased investment in post-harvest staple crop activities*. In order to achieve the goal of this axis, the following sub objective will be pursued:

1. Private sector accessing financial services

The delivery of this component of the Strategy will be identified by the Rural and Agricultural Finance Strategy being led by MINECOFIN with support from MINAGRI and MINICOM.

There are two principal components to increasing the performance of the financial services for the post-harvest private sector under this axis; increasing the utilization by post-harvest actors of existing financial incentive mechanisms available, and enhancing the capacity of the financial services sector to evaluate agricultural risk, expand available financial mechanisms and lend to the sector. Both of these activities should increase investment in viable post-harvest handling, storage, and processing capacity.

Financial incentive mechanisms for expanded private sector investment and operations do exist within Rwanda. The private sector undertaking post-harvest activities, including handling and processing capacity, are not leveraging these instruments. An assessment is needed to first understand the underlying issues affecting the mechanism utilization and relevant capacity limitations within the financial institutions. Modifications to the existing incentives, such as RIF II and ACGF, may be needed. If utilization is not improved, then these resources will 'expire' and Rwanda will lose access to these investment funds.

Financial service institutions need strengthened capacity to evaluate agricultural risk and develop lending products that recognize inventory and most specifically commodities as collateral. This is necessary at all levels of financial service provision. While there are some nascent experiences with inventory credit at relatively small volumes at the cooperative and producer levels, the financial institutions lack the capacity to fully understand their own risk profile assumed through this lending. Strengthening the capacity of the financial service sector to develop products, evaluate risk, and lend to the staple crop value chains should assist in easing cash flow across the market, from the producers

¹⁶ Increased investment in storage already being demonstrated by three private sector companies under the USAID Market Linkage Initiative Project.

through processors and marketers.

4.1.6 Enhance structured staple trade

The overall target outcome for this axis is *businesses surveyed purchasing staple crops based on RBS grades and standards*. In order to achieve this goal of this axis, the following sub objectives will be pursued:

1. Expand staple crop grades and standards
2. Extend awareness of staple crop grades and standards
3. Improve staple crop market trade infrastructure

The delivery of this component of the Strategy will be led by MINICOM with support from MINAGRI and RDB.

The Rwanda Bureau of Standards (RBS) is advancing an effort to extend staple crop standards and harmonize Rwanda's standards with the EAC. This should be expanded to ensure all staple crops are addressed with grades that meet EAC requirements but also have grades which address internal Rwanda trade requirements. To develop key viable grades and standards a dialog framework developed with private sector for ongoing review, consideration. A discussion of standardizing the use of 50 kg bags in the cereals and legumes trade could lead the agenda. The consultation should ensure that private sector participants represent the full value chain, from producers through retailers (and include relevant services, like transport.) Improved quality that is not reflective of market norms can mean increased prices to consumers or reduced prices to farmers. The dialog framework should prioritize grades that reflect actual quality levels traded in the market and accepted by the consumers.

RBS also provides grades and standards awareness and capacity building to key stakeholders. In the case of agricultural commodities, RBS partnerships with the extension services and Rwanda Cooperative Agency (RCA) can enhance the reach of grade and standards sensitization producers and cooperatives.

Grades and standards messaging should be developed with strong economic consideration including sorting, grading, handling; also emphasizing the varied market options (formal market and institutional markets remain relatively small.) Traders (both formal and informal) should play critical role and partner in evaluating economic relevance of grades and standards recommendations delivered to producers and cooperatives.

Physical marketplaces can provide a transparent meeting place of buyers and sellers that can ease the trade of commodities. Increased urbanization necessitates a specific plan for addressing the delivery challenges that come from growing consumer demand for staple foods. These growth oriented marketplace infrastructure investments, planned to meet the logistics requirements of future increasing volumes, can assist in formalizing the existing spot markets. Physical marketplace investments are not relevant at every aggregation and trade point, or even every district, but would be located at identified strategic trade points supported by feasibility studies. By investing to assist in spot market formalization, communication of price signals along the chain will increase.

4.1.7 Transparent strategic grain reserve supporting food emergency needs and liberalized markets

The overall target outcome for this axis is *that RSGR operations have minimal effect on the grains markets*. In order to achieve the goal of this axis, the following sub objectives will be pursued:

1. RSGR functioning under sound principles and transparent management
2. Leverage RSGR buying power to support disadvantaged viable markets which will be benefited by prioritized road improvements

The delivery of this component of the Strategy will be led by Office of the President with support from MINAGRI and MINECOFIN.

The principal objective of the Rwandan Strategic Grain Reserve (RSGR) is to cope with food emergencies. It is a tool for emergency response and GOR humanitarian obligations, reporting directly into the Office of the President. The Government is responsible for the cost of maintaining the RSGR. **The RSGR is not commercial and will incur ongoing financial operational costs.**

The RSGR operations manual will outline a set of clear operational guidelines that prioritize transparency, coordination between the public and private sectors, rules that are stable and predictable, and are implemented without influence of conflicting priorities.

A combination of physical stocks along with a cash reserve would make up the RSGR. The cash reserve may be a combination of actual cash set aside and a Government commitment to meet a cash requirement if triggered by a scenario laid out in the operations manual. A minimum physical reserve amount should be determined in relation to domestic consumption (the data to be collected in the above axis 1.) The tonnage within the reserve mechanism will correlate to a time window necessary to arrange alternative supplies (regional and international) to be transported in to meet crisis.

An underlying management and operations objective would be cost effective implementation; the responsible use of GOR resources. Purchases to meet the reserve volume requirements would need to acquire grain via open tender from the market, and not specify product origin – in addition to being the most cost effective; this would also minimize market distortions. The RSGR can also reduce operational costs by contracting for private sector services instead of maintaining physical warehouse space itself. Tender mechanisms would be used for both purchase and sale (recycling or release) of the grain as well as for storage and stock maintenance services. This would also provide additional incentive to the private sector to invest in private warehousing.

A **secondary short-term objective** of the RSGR may be to leverage RSGR buying power to build disadvantaged viable markets, which will be supported by prioritized road improvements. This use of the RSGR buying power would target identified areas where it is not currently commercially profitable for the private sector to buy grain. By pursuing this objective there is **an incremental price**, as the Government would be paying for an additional social benefit.

It would be important that this secondary objective not interfere with the principal objective of a stock to cope with food emergencies, and must work to avoid distortion to the normal functioning of the market and the resulting negative implications for private sector activity. This would also be pursued only as a short-term strategy alongside complimentary investments to address the underlying market failure, such as market access roads for targeted areas. If complimentary investments are not

being made, then leveraging the buying power of the RSGR in this way would not make sense and would not be pursued.¹⁷

5. COORDINATION, MONITORING, AND EVALUATION

A strategy by its nature is holistic with activities in many different areas required to achieve the overall goal. The National Post-Harvest Staple Crop Strategy (PHSCS) is no different and has activities, which need to be supported and implemented across a number of ministries and agencies. Coordinated implementation across ministries and agencies is essential for the strategy to achieve its overall goal. If one or more ministries and agencies fail to align activities and allocate budget resources to the PHSCS, the overall goal of the strategy will fail.

The strategy consists of axes of intervention with each axis composed of a number of sub-objectives. The instruments implementing the sub-objectives are: projects, regulator or policy decisions, institutional changes, and the voluntary cooperation of the private sector. The responsibility for overseeing the implementation process will need to be established first at the Joint Delivery Committee (JDC) level, then at the Post-Harvest Strategy Implementation Secretariat (PHSS) level by objective, then sub-program and finally by activity in each sub-program.

Principles of Implementation

Comparative advantage: PHSCS activities will be implemented by the institution or agency with strong comparative advantage in a specific area whether government, private sector, NGO or development partner.

Mainstreaming: Implementation will be directed through existing government and private sector structures where possible. Capacity of such structures will be strengthened where necessary and new structures or task forces should be created only if there is no other alternative.

Consolidation/Simplification: Existing implementation structures (for example in on-going projects) should be consolidated within the PHSCS objectives and activities to minimize duplication, unclear responsibility, and mixed messages.

Clarity of roles and responsibilities: Implementation structures will make it clear who is responsible for carrying out each activity and how they will be coordinated by the PHSS, how funding will be provided, and how progress will be monitored, and impact and outcomes evaluated.

Implementation Structure

Each axis has a nominated lead institution that is responsible for overall coordination and implementation of that particular axis. The lead institution will coordinate any activities other institutions and agencies may be responsible for carrying out in order to achieve the overall objective. The lead institution will be responsible for reporting progress on activities as well as against the Performance Monitoring Plan.

¹⁷ Further discussion of RSGR is located in Annex 1.

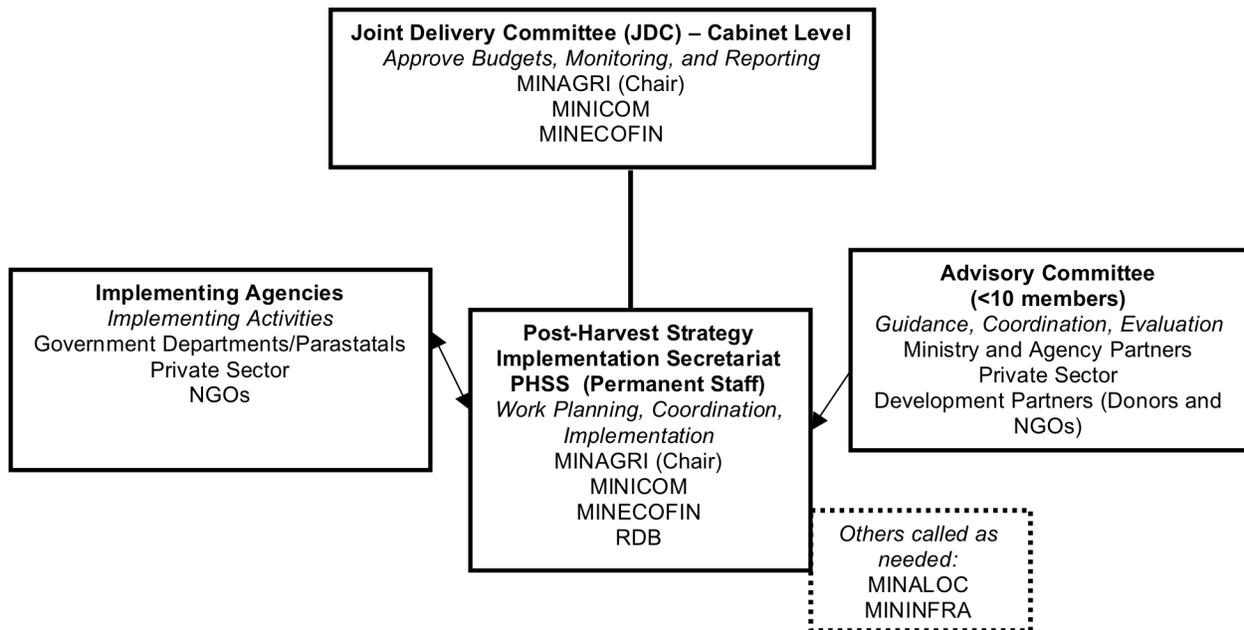
Implementing institutions and agencies will be expected to implement PHSCS activities as part of their core work activities and not as separate projects.

Table 4 and Figure 6 present the institutional structure for implementation.

Table 4: Implementing Institution by Axis

Strategic Axis	Lead Implementing Institution	Draft Budget (USD)
Information available for public and private decision making	MINECOFIN	1,065,000
Efficient and equitable transport systems across staple crop producing areas	MINICOM	36,033,765
Reduce staple crop post-harvest losses at producer and first aggregator level	MINAGRI	18,361,758
Strengthen private enterprise in staple crop value chains	MINCOM	1,920,000
Increase private sector post-harvest investment	MINICOM	980,000
Enhance structured staple trade	MINICOM	6,628,280
Transparent strategic grain reserve supporting food emergency needs and liberalized markets	Office of the President	1,285,000
Post-Harvest Strategy Implementation Secretariat (PHSS) operations		1,705,000
Total		67,978,802

Figure 6: Overarching Structure for Implementing PHSCS



Joint Delivery Committee (JDC)

The implementation of the PHSCS will be coordinated, monitored and directed by the JDC which meets at least once a quarter. The Ministry of Agriculture is the overarching coordinating Ministry for the strategy. The JDC’s specific role will be to approve submitted budgets by the PHSS, monitor progress against the PMP, and then report to the cabinet on progress made, and any constraints.

PHSCS Advisory Committee

The Advisory Committee is the main forum for technical guidance and advisory support to the PHSCS. The PHSCS Advisory Committee is made up of members from implementing ministries, private sector representatives, RDB, and development partners (as non-voting members). The PHSCS Advisory Committee will be jointly chaired by Government and the private sector to ensure that Government and the private sector move the PHSCS forward in a Public Private Partnership (PPP) relationship. The Government chair will be the PS of MINAGRI. Until such time as the Private Sector Platform has been established and functioning, the Platform will be represented by the RDB. The Advisory Committee will meet monthly. The secretariat for the Advisory Committee will be provided by the PHSS.

Post-Harvest Strategy Implementation Secretariat (PHSS)

The implementation of the PHSCS will be mainstreamed in the work of the Government of Rwanda’s Ministries. The Ministry of Agriculture is the overarching coordinating ministry for the strategy and the lead agency for Axis 3. The Post-Harvest Task Force within MINAGRI should have its Terms of Reference and capacity reviewed by the Advisory Committee and the Post-Harvest Task Force would most likely be subsumed within the PHSS.

The core responsibilities of the PHSS will be to:

- ensure all implementing agencies are aware of their implementation roles and responsibilities under the PHSCS implementation plan
- identify capacity building support needed to implement agents, draft TORs, identify service providers to build required capacity to meet their responsibilities under the Implementation Plan
- develop work plans at the objective, sub-objective and activity levels
- establish the system for monitoring the performance of strategy (using other systems where applicable) and using resources allocated by the JDC to recruit an M&E specialist to be positioned in the MINAGRI
- provide consolidated progress and financial reports to the JDC and the Advisory Committee
- facilitate effective communication and cooperation between PHSCS implementers and wider stakeholders and brief on progress towards other sectors and overall economic development
- provide secretariat services to the Advisory Committee
- provide technical advice and support for PHSCS implementing agencies
- organize and provide logistical support for midterm review of PHSCS
- develop with implementing agencies and the Advisory Committee updates to the PHSCS implementation plan

To deliver this level of responsibility the members of the PHSS will need to be highly capable professionals. From time-to-time the PHSS will need to reinforce its capacity through hiring additional professionals to assist with specific short and medium term activities. It is envisioned that the PHSS will have a minimum of four posts, each located in a key implementing institution. The overall coordinator will be positioned within the MINAGRI, with three additional coordinators in each of the following: MINICOM, MINECOFIN, and RDB. These coordinators will meet weekly to review progress, coordinate ongoing activities, and plan future activities within implementing institutions and agencies. When needed, the PHSS can put additional short and medium term coordinators into other Ministries.

Lead Institutions

For each of the axes of the PHSCS a Lead Institution will be assigned. The Lead Institution will be responsible for coordinating the work of the other Implementing Agencies (IA) under the axis and will report to the Advisory Committee on progress and areas of constraint where additional coordination or activities may be needed.

Implementing Agencies

The two main categories of implementing agent are Government and private sector, and are described below:

- Core government institutions include the MINAGRI as the lead ministry for the PHSCS (axis 3), MINECOFIN (axis 1 and 5), MINICOM (axes 2, 4, and 6) and the Office of the President (axis 7). Additional supporting agencies include ISAR, NSIR, RADA, RARDA, RBS, RCA, and RDB.

- Private sector implementing agencies include private sector representative associations for sector coordination, advocacy and delivery of services providers such as BDSs, access to finance bodies, and market development.

Monitoring and Evaluation

As with all activities planned, measuring the delivery of impact, outcome and its sustainability are critical. Monitoring involves various key steps and which are to observe the changes that indicators experience over time, analyze the collected data, develop conclusions and formulate opinion based on observations of those changes. Reporting comments, conclusions and recommendations back to the managers and decision-makers represents the final step. The approach nominated to monitor, and ultimately evaluate, the impact and outcome of the PHSCS will be as lightweight as possible yet retaining the need for it to be thorough and rigorous. The concern is to put in place a system that places the least burden on the workload of existing officers and staff in Government and by contracting in additional resources as needed. The system has been designed in such a way that findings, opinion and recommendations are in a form that is succinct, clear and easy to deliver.

Accompanying this Strategy is a separate Performance Monitoring Plan (PMP) that will be used as the basis for reviewing progress of implementation.

The core elements of the PMP are:

Institutional Framework: The implementation of the PHSCS is neither straightforward nor free from institutional complications. This applies to the area of monitoring and evaluation as well. Of concern is the need to ensure the Monitor and Evaluator (of which there will be several) function as independently as possible yet have authority to go about their work collecting data, interviewing and meeting with a wide range of stakeholders as possible.

As a result of the involvement of several Ministries, agencies and bodies and supporting donor partners, the institutional home for this activity has complications. Given that several different Ministries have responsibilities for the implementation of different Axis in the Strategy sufficient buy-in from them will be critical. Given that the overall responsibility for implementation of the Strategy rests with MINAGRI, the PMP Monitor functions should be located within this overall Responsible Agency and for them to report to the PHSS and JDC.

Indicator System: The PHSCS is governed by a set of Objectively Verifiable Indicators (OVIs) which act as a mantra for each activity of each Sub-Objective and in turn of each Axis. These indicators attempt to capture measurable data and results from the activity in its widest and deepest form. This is to say, indicators have been developed to be as Specific, Measurable, Appropriate, Realistic and Time Bound (SMART) as possible and for them to last the duration of the Strategy. While indicators measure the number of outputs as well as the timing of those outputs they are also intended to capture intended outcomes, which will have longer term and hopefully sustainable impact from all the interventions planned. The accompanying logframe to the PHSCS provides a clear framework for this system.

There exist already a number of monitoring systems in Government at national, sub-national and sectoral levels which have indicator lists but which are not necessarily prioritized. The intention of

this PHSCS monitoring system is to compliment these existing systems by keeping the indicators short, measurable and result oriented and possibly found in existing systems already. This will keep costs down and help provide a succinct set of results.

Linking Inputs, Outputs and Outcomes: The approach adopted links inputs in terms of financial resources, people and institutions to required outputs by keeping all important outcomes, impact and sustainability issues firmly in mind.

Linking Data to Policy Making: The analysis of data collected through the monitoring and evaluation exercises will be delivered in the form of short but structured (max. 10 pages) reports. These reports will be organized along the lines of the Organization for Economic Cooperation and Development – Development Assistance Committee (OECD-DAC) criteria of relevance, efficiency, effectiveness, impact and sustainability. In addition they will include recommendations and lessons learnt and will be geared towards providing evidence for decision-makers and funders as they implement the Strategy on which to make decisions.

Joint Reviews: In addition to the regular monitoring, the monitoring functions will be complimented by occasional Joint Reviews between Ministries and key stakeholders. These Joint Reviews will focus on particular elements of Strategy implementation, which will help build greater understanding of some of the more complex elements of the Axes. Three or four of these over this five-year period are foreseen. These Joint Reviews are in addition and separate from surveys and other studies built into the PHSCS plan of activities.

Evaluation of PHSCS: The Strategy will be subject to a Mid-Term Evaluation (MTE) (to be undertaken at the end of year three) and a Final Evaluation (to be undertaken in the latter half of year five but still within the lifetime of the Strategy). These will be undertaken by independent evaluators recruited by the PHSS.

Reporting: Once a baseline has been established in the first few months of the first year of Strategy implementation the monitoring program will be put in place. This will involve regular, routine reports to the PHSS by the monitoring services every quarter by each Coordinator. The Chair of the PHSS will in addition be required to submit six monthly reports to the Advisory Committee on all elements of the PHSCS implementation using the reports from the Coordinators.

An independent Monitoring Service Provider will be required to undertake short missions, lasting 10 to 15 days once every six months to complement the reporting by the Coordinators. In all cases the logframe and indicators therein, will be used as the basis for review.

In totality, these reports will form the historical record of performance and degree of progress towards the objectives of developing a strengthened post-harvest and storage system.

6. LOGICAL FRAMEWORK OF THE NATIONAL POST-HARVEST STRATEGY

Overall Objective	Indicator	Means of Verification	Risks and Assumptions
Reduced food insecurity through an efficient post-harvest private sector system delivering staple foods to the people of Rwanda	Rwanda handling costs are similar or better for the same commodities in other countries in the EAC (benchmarked)	Regional Benchmarking Studies, Government and Donors Reports	Continue to move towards competitive productivity
Primary Objectives			
Axis 1			
Information available for public and private sector decision making	Increased investment in staple crop business and increased turnover	Government decisions not made based on facts. Informal sector will freely participate.	Government decisions not made based on facts. Informal sector will freely participate.
<i>Sub Obj 1.1</i>			
Strengthen basic data system	Relevant information being generated and used by public and private sector	Report on output of activities in sub obj 1.1	Information is freely available
<i>Sub Obj 1.2</i>			
Private sector generating market intelligence	Relevant information being generated	Report on output of activities in sub obj 1.2	Information is freely available
Axis 2			
Efficient and equitable transport systems across staple crop producing areas	Reduced transport costs	Assessment reports on the comparison of 2.1.3, 2.2.3	No unforeseen delays
<i>Sub Obj 2.1</i>			
Investigate transport component of staple crop marketing costs	Transport cost reports are referenced in trend analysis in axis 1.2 and used to prioritize infrastructure development	Trend Analysis Reports	No unforeseen issues with data collection or road construction

<i>Sub Obj 2.2</i>			
Reduce road transport costs between production and secondary aggregation points in high potential areas	Reduction in transport costs on targeted roads	Annual action plan progress reports	Not all constraints can be necessarily removed
<i>Sub Obj 2.3</i>			
Address prioritized 'soft' constraints	Reduction in 'soft' constraints	Annual action plan progress reports	Not all constraints can be necessarily removed
Axis 3			
Reduce staple crop post-harvest losses at producer and first aggregator level	Reduction of post-harvest losses at producer and first aggregation level	Biannual Post-harvest Loss Surveys	Assumption significant losses at producer and first aggregator level
<i>Sub Obj 3.1</i>			
Build ISAR Post-Harvest Team capacity	ISAR promoting commercially viable technology	ISAR records on technology transfer to manufacturing companies	Assumption that ISAR ready to take on a commercializing role and carry out relevant research
<i>Sub Obj 3.2</i>			
Identify and prioritize economically relevant post-harvest technology	Uptake by the manufacturing sector of commercially viable technologies	Survey of sale records	No unforeseen issues with technology uptake and that degree of risk aversion changes
<i>Sub Obj 3.3</i>			
Disseminate and promote the uptake of technology	Uptake of technology by farmers and first aggregators	Survey	No unforeseen issues with technology uptake
<i>Sub Obj 3.4</i>			
Reduce post-harvest losses	Reduction of post-harvest losses at producer and first aggregation level	Practice adoption survey	Financing for new technology can be secured and appropriately customized
Axis 4			
Strengthen private enterprise in staple crop value chains	Increased investment in staple crop business and increased turnover	Banks, private sector, donor disbursement records	Other factors not identified do not threaten uptake

Sub Obj 4.1			
Empower the private sector to support the delivery of staple foods to the market	Annual increase in membership and continued renewal of membership in the private sector platform	Fully paid up membership list	Private sector players keen to continue in PS Platform
Sub Obj 4.2			
Transfer skills to all enterprises involved in moving staple grains into markets	Businesses adopt and use new practices	Survey business practices against practice baseline	Other factors not identified do not threaten uptake
Sub Obj 4.3			
Sufficient storage available throughout the supply chain for harvested staple grains	Increased storage capacity built by the private sector	Banks, private sector, donor disbursement records	There is significant need to increase in storage facilities
Axis 5			
Increase private sector post-harvest investment	Increased investment in post-harvest staple crop activities	Reports from MINECOFIN, banks, private sector, donor disbursement records	Free access to documentation which contain sensitive information of businesses
Sub Obj 5.1			
Private sector accessing financial services	Increased investment in post-harvest staple crop activities	Reports from MINECOFIN, banks, private sector, donor disbursement records	Free access to documentation which contain sensitive information of businesses
Axis 6			
Enhance structured staple trade	Businesses surveyed purchasing staple crops based on RBS grades and standards	Surveys	International prices do not fluctuate unexpectedly
Sub Obj 6.1			
Expand staple crop grades and standards	Formal industry using RBS grades and standards as a basis for purchases	Analytical report shared with RBS	Risk is that the grades and standards do not include representation from the whole value chain

Sub Obj 6.2			
Extend awareness of staple crop grades and standards	Increased awareness of grades and standards along the supply chain	Sample Survey Report	Assumes that there is capacity to fully capture sufficient numbers along the value chain
Sub Obj 6.3			
Improve staple crop market trade infrastructure	Modern marketplaces developed	GIS map and report	Newly identified sites for markets and their subsequent construction become economic centers within 5 years
Axis 7			
Transparent strategic grain reserve supporting food emergency needs and liberalized markets	RSGR operations have minimal effect on the grains markets	Annual Assessment Report	RSGR will be implemented according to its guiding principles detailed in the operational manual
Sub Obj 7.1			
RSGR functioning under sound principles and transparent management	RSGR functioning according to its operations manual	External Annual Performance Assessment	RSGR will be implemented according to its guiding principles according to the operational manual
Sub Obj 7.2			
Leverage RSGR buying power to support disadvantaged viable markets which will be benefited by prioritized road improvements	RSGR purchases only from identified target markets and, upon completion of road construction, the RSGR stops targeted buying within those markets	External Annual Performance Assessment	Complementary investments may not be made

ANNEX 1 – RWANDA STRATEGIC GRAIN RESERVE (RSGR)

Strategic grain reserves in Rwanda are intended as a safeguard against food emergencies. Within the context of using a strategic grain reserve there are two main types of food emergencies: acute food emergencies resulting from when a certain proportion of the population is exposed to an external event displacing or destroying their food supplies (such as an earthquake destroying household stocks, or a flood washing out a bridge and preventing food to move to a market), or a significant shortfall in production causing rampant inflation in staple food prices. These different scenarios need different management; for instance in the case of a shortfall in production there is generally a long lead-time of at least 2 – 3 months when the market is aware of the problem and the prices are climbing in response to the anticipated harvest shortfall. These prices will generally rise until they reach import parity, which is generally made up of the cost of a commodity located in another country and the cost of the transport to a point in Rwanda. This price may be higher than a proportion of the population can afford. The SGR can then be used to release food onto the markets to lower the market price, or to provide food to those who cannot afford to buy. As the government releases stocks it purchases imported stocks (otherwise it will add to food inflation) and continue to release stocks until the crisis is over.

The management of food reserves should have both the public and private sectors playing active roles. The RSGR will develop a set of standard operation guidelines that prioritize sound principles, transparency, coordination between the public and private sectors, and rules that are consistent, and are implemented without influence of conflicting priorities. Based on storability, availability, and consumption needs the RSGR will stock maize (representing general carbohydrate needs) and beans.

Critical information gaps have been identified that must be clarified prior to taking operational decisions in regards to the RSGR. Addressing these gaps will be prioritized in the subsequent staples post-harvest strategy action plan. It is anticipated that the detailed objectives, structure, management, decision-making triggers, and operations of the RSGR will be detailed in an Operations Procedures Manual (OPM) to be developed early on in implementation of the Post-Harvest Strategy. The OPM will be published and readily available to the public (and specifically to the staples private sector) and will guide the implementation of the RSGR.

Size of Reserve

The minimum physical reserve tonnage should be determined after reviewing production and domestic consumption (the baseline data to be collected in the above mentioned information axis, section 5.4.1). The reserve tonnage is calculated based on the estimated food needed to feed a proportion of the population to address an emergency while waiting for additional food to move into the market. Thus the total tonnage should correlate to a time period necessary to arrange alternative supplies (regional and international) to be transported in to meet the emergency need. The additional supplies may be brought in by the private sector in response to the market shortfall, while the SGR stock release can cover a limited time period until these supplies start flowing into Rwanda. During an acute emergency, the Government may distribute their stocks to the vulnerable and as relief. Best practice recommendations, including the FAO's Strategic Grain Reserves – Guidelines for their establishment, management and operation, suggest that the time window is generally between 1 month and 2 months.

A 2002 CIAT-ATDT/ISAR/IITA-FOODNET and PEARL Project report estimated maize purchased for human consumption to be an average of 6.8kg/person/year while total consumption of maize was estimated at 18 kg per person.¹⁸ Anecdotally, per capita maize consumption has continued to increase; to be confirmed and quantified in the consumption data collection and analysis. As an example if per capita consumption of purchased maize products increased to a level of 25 kg/person/year and the current population is roughly 10,000,000; the total consumption of maize would be 250,000MT. The market also includes some limited animal feed milling, though this is expected to increase in the future (appropriate adjustments to be made with new data.) If current animal feed milling consumed an additional 10,000MT, the total internal market demand would be 260,000MT, equating to an average monthly demand of approximately 22,000MT. A 2-month supply of maize would be equal to 44,000MT, however 100% of the entire two months stocks will not be needed at any one time, therefore a proportion of the population which will need support has to be estimated based on realistically estimated food emergency needs. This stock would be maintained in a physical stock strategic grain reserve. It is important to note that there is a tendency to over-estimate the size of a potential food shortfall and the size of a necessary reserve to cope with it, in particular because of an underestimation of consumption substitution – people changing eating habits and switching to alternative foods during a shortage. There is also generally an underestimation of the real costs of maintaining and restocking a food reserve cost and the cost to the overall market.

Table 5: Example calculation: Size of Physical Stock in RSGR

<i>**Requires actual consumption and market data; Table is an example only</i>	
25	kg/person/year
10,000,000	Population
250,000	MT consumption
10,000	MT animal feed maize requirement
260,000	MT total market demand
21,667	MT average monthly market requirement
43,333	MT 2 month minimum physical stock for 100% of the population
17%	Reserve as a % of Total Market

Table showing different stock levels based on a percentage of the population needing feeding and a value of the stock

¹⁸ CIAT-ATDT/ISAR/IITA-FOODNET and PEARL Project – Rwanda, Maize sub-sector survey, November 2002.

Table 6: Stock levels based on a percentage of the population needing feeding and stock value

		% of total annual consumption	Value based on \$200 / MT
Stocks to feed 100% of the population for 2 months	43,333 MT	16.7%	\$8,700,000
Stocks to feed 75% of the population for 2 months	32,500 MT	12.5%	\$6,500,000
Stocks to feed 50% of the population for 2 months	21,667 MT	8.3%	\$4,400,000
Stocks to feed 25% of the population for 2 months	10,833 MT	4.1%	\$2,200,000

Additional to the cost of purchasing the grain must be added transport, handling, storage including regular fumigation, financing and the cost of selling at loss into the market or distributing free of charge.

To provide this within the context of the EAC regional SGR's:

	Rwanda example from above	Kenya Market	Uganda Market	Tanzania Market
MT Size of Maize Market	260,000	3,200,000	1,200,000	2,900,000
Population	10,000,000	40,000,000	33,000,000	44,000,000
MT Size of Physical Reserve	21,600	360,000*	0	60,000
Reserve as a % of Total Market	8%	11%	0%	2%

*the mandate of the Kenyan SGR is to hold up to 360,000 MT, much of the time it holds considerably less.

It is anticipated that the RSGR will be a combination of both physical and cash reserves. The size of the physical reserves will be determined once additional data is quantified regarding market size. The existence of a cash reserve can reduce the cost of maintaining larger physical reserves and allow rapid intervention in times of significant harvest shortfall. This can be cash deposited in an interest bearing account that can be drawn upon based on guidelines and triggers outlined within the OPM.

Stock Maintenance (warehousing and quality)

The physical stock should be held where there are appropriate facilities for handling and storage with a view to minimizing RSGR costs (ie locating stores as close to major production areas as possible to reduce transport cost). These costs include but are not limited to transport costs into and out of the

reserve, cleaning, drying, storage including fumigation and maintenance of infrastructure, insurance, financing and staff costs. The RSGR should consider the economic advantages of contracting out to the private sector purchase, storage and maintenance of the reserve. Such an action will reduce the management cost (since it can be combined with other commercial activities) and potentially incentivize additional investment by the private sector in storage. Warehousing infrastructure is expensive to build and unless they are full 80% of the year it is hard to earn enough from storage costs to repay financing – especially in staple grain markets where the price increase from harvest to the deficit period is often not much higher than the carry cost of storing and financing the grain.

As MINAGRI is currently building two silos (20,000MT total capacity) to be used as a SGR, there is an opportunity to tender the leasing of these stores and the management of the SGR within the stores to the private sector. As additional storage is made available in more rural areas, the amount of SGR held in these silos could be reduced and the lease-holder would then use the additional storage for other economic activities. Subsequently a timeline would be laid out to privatize the infrastructure within number of years.

Purchase, Recycling, and Release

Purchase of grain for the RSGR should be via public tender. As the primary objective is to enable Rwanda to cope with food emergencies, no origin requirement would be required in the purchase of the maize or beans therefore the winning bids would be based on the best price and performance record.

Implementation of the potential secondary objective of the RSGR, to leverage RSGR buying power to build disadvantaged viable markets which will be supported by prioritized road improvements, comes at an additional price, as the Government would be paying for a social benefit. Transparent and predictable operational procedures and analysis to decide what constitutes such a disadvantaged area must be defined and published. There is a risk of political maneuvering to become classified as such an area. This must be avoided with analytical transparent decision-making. This intervention within an area must also be time-bound and correlated with complimentary investments to address the underlying market access issues, such as access roads for targeted areas. The grain to be purchased by RSGR through this secondary mechanism would also be bought by open tender, but with conditions outlining the targeted production or geography and methods to monitor both the purchases and the impact of the purchases. The total quantity purchased in anyone season cannot exceed the overall size of the RSGR.

To ensure the overall good condition of the stocks each year a percentage of the held stocks must be sold and repurchased. While grain can be stored longer than a year, quality does incur some deterioration. The OPM will outline conditions that would warrant carrying the physical reserve longer than two seasons (1 year in Rwanda). Recycling would most likely be achieved by selling into the market prior to the beginning of a new marketing year. The rotation of stock may be sold into institutional demand needs such as prisons, schools, relief agency programs or through open sales into the market. Sales to rotate stocks should be competitive to ensure the best possible price is achieved, while sales to address food inaccessibility by those who are food insecure maybe at subsidized prices – potentially through voucher systems.

Releases may occur via emergency distributions as well as sales into the market during periods of food shortages. The OPM would outline the decision-making triggers and processes. The ongoing

operation of the strategic grain reserve will result in a cost to Government, especially in the case of a relief distribution due to acute disaster or humanitarian emergency.

Management and Finance

The function of the RSGR is not commercial and will incur financial losses. It is a tool for emergency response and GOR humanitarian obligations. The Government is responsible for the cost of maintaining the RSGR. The RSGR will most likely be a separate agency under the Office of the President. Direct allocation of funding is anticipated for the establishment of the reserve, though access to soft loans could also be used. The reserve will require annual cash injections to cover its operation costs as recycling of grain may not completely cover the cost of storage and maintenance. Sale of recycled stocks would provide the cash flow for the purchase of replacement stocks. When the stocks are handed out as emergency relief the government will have to provide additional funds to replace the stocks.

For reference the 2010-2011 Post-Harvest and Storage Task Force Action plan outlines an intention to purchase 60,000MT of maize and beans from 2011 Season A as a SGR. The budget outlined in the action plan follows:

2011 Budget for SGR activities				
from 2010-2011 Post-Harvest and Storage Task Force Action Plan				
Activity	Unit	Quantity	Price (RWF)	Total Cost (RWF)
Construction of Metal Silos (20,000MT Total)	silos	2	700,000,000	1,400,000,000
Warehouse Construction	warehouse	1	550,000,000	550,000,000
Purchase of Grain	MT	60,000	203,000	12,180,000,000
Stock maintenance	fumigation and maintenance contract	3	70,000,000	70,000,000
Total Cost of SGR Activities 2011 (RWF)				14,200,000,000