



**Republic of Rwanda**  
**Ministry of Agriculture and Animal Resources**



**Rwanda's Rice Commodity Chain**  
*– Facing Globalization*

Arumugam KATHIRESAN  
Consultant

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## Acronyms

CET: Common External Tariff (ad valorem tariff)

CIF: Cost, Insurance and Freight

CIP: Crop Intensification Program

EAC: East African Community

EICV3: Enquête Intégrale sur les Conditions de Vie des Ménages 3/ Third integrated household living conditions survey (EICV3): Thematic Report; Patterns of Consumption (2010-11)

ICM: Inter City Mills Rwanda Ltd.

RAB: Rwanda Agriculture Board

RBS: Rwanda Bureau of Standards

RCA: Rwanda Cooperative Agency

RRA: Rwanda Revenue Authority

RSSP: Rural Sector Support Project

MINAGRI: Ministry of Agriculture and Animal Resources

MINICOM: Ministry of Industry and Trade

VAT: Value Added Tax

## 1. Executive Summary

Rice has become a major commodity in the food baskets of rural- and urban households in Rwanda. In the recent years, the local production of rice has increased substantially owing to huge investments in the expansion and rehabilitation of marshland areas under rice cultivation. The current national average on-farm rice yield level of 5.7 t/ Ha is significantly higher than the global average productivity level of 4.3 t/ Ha.

The recent surge in national demand for consumption of rice on the other hand however has far exceeded the local production. Local markets have hence been aggressively importing rice from other rice producing countries in order to meet the demands of consumers. In the past 4 years, the importation has accounted for 48.2% of all the available rice in the markets.

Nonetheless, the market competitiveness of locally produced rice has also improved substantially in the recent years, as judged from the increase in consumption of local rice by rural- and urban households. The enhanced marketability of local rice shall be attributed to several recent government policy measures such as modernization and privatization of rice mills and various promotional activities along the rice value chain.

The trading network for paddy which hitherto had been weak and fragmented was recently restructured. Rural traders were banned and producers were allowed to sell paddy through cooperatives and unions directly to mills. To help rice producers find a guideline value for their production, MINICOM sets farm gate prices every season. Recently however, the flow of local paddy into the mills has slowed down; while the imported rice continues to flood local markets. This report aims to assess the rice commodity chain in Rwanda in the light of increased competition from imported rice.

Horizontal linkages within individual groups of actors in rice commodity chain are generally strong in Rwanda. The deep rooted culture of cooperatives has helped unite producers in sharing natural resources and other inputs when become available. The millers are also increasingly aligning their interests and business strategies cohesively. Although fragmented, the importers, distributors and wholesalers of rice have good communications to perceive the supply, demand and price movements in national and regional markets. Vertical linkages between the various sets of actors however are weak leading to mistrust and diverse opinions. This emphasizes the need for more and frequent coercing activities by the chain supporters.

Rural households in Rwanda spend annually more money (30,400 RWF) than the urban households (20,660 RWF) on rice. Although both the rural- and urban households consume imported rice, about 65.5% of the rice purchased by rural households is locally produced; and in contrast, about 62% of the rice purchased by urban households is imported. If the socio-economic forces that contributed to the increased rice consumption (changes in income, lifestyle and globalization) are to continue, the

estimated demand for rice will increase to about 204,000 tons of milled rice by 2018; requiring Rwanda to grow rice over about 55,100 Ha at current productivity level. Given the limitations in land availability however, only about 14,701 Ha of land was cultivated with rice in Rwanda in 2012. Thus the rapidly rising demand for rice consumption requires that the locally produced rice coexists with imported rice and competes efficiently in the markets.

At the current production level, the available milling capacities in the country are adequate. However, difficulties in physical access by producers to mills, and excess or low milling capacity exist in certain production pockets need to be addressed through a location specific fine-tuning of policies. A large number of traders have now started to sell local rice as the sales turn-over rate for locally processed rice has improved significantly in the recent years.

However there are quantitative and qualitative gaps between local production and the consumer needs. About 70% of the Rwandan farmers cultivate short- and bold grain (japonica) type of paddy, whereas about 74% of the local consumers prefer long (54%) and aromatic (20%) grains. This mismatch is mainly due to the lower risks involved in production of short- and bold grain varieties and the inadequate adaptability of the available long grain varieties to the various biotic- and abiotic stress challenges in the marshlands.

Farm gate prices are set on the basis of costs of production and the associated logistics. Although both farmers and millers prefer the government's facilitation in negotiating the price, both the parties are generally not satisfied with the price figures. While the millers disagree with a pragmatic fear of competition from the more appealing and delicately priced imported rice that flow constantly into the local markets, the farmers argue that the prices are low given the higher costs involved in production.

The estimated cost of production of 668.9 USD/ton of milled rice in Rwanda however is already significantly higher than that in other rice growing countries in Africa and Asia. A major portion of this cost is spent on labor, input and administrative costs. Facilitating mechanization of rice farming through appropriate designing of marshlands, labor saving technologies and cost efficient machineries and tools shall significantly reduce the pressure on farm gate prices. Policies that will promote increased private sector participation along the rice value chain shall also reduce the unit costs of inputs. Through such research and development outputs as short duration, high yielding inbred-, hybrid- and consumer preferred varieties; the land- and crop productivity shall be enhanced.

Given the high production costs, 75% *ad valorem*/common external tariff imposed on imported rice in Rwanda under the East African Community (EAC) has until recently buffered the price competitiveness of locally produced rice with that of imported rice from Asia. During the progression of global food price crisis, the market price for both local and imported rice increased in Rwanda and in the region. However during the deceleration phase of the crisis, the market prices for rice did not plunge in local

markets in line with the declining global rice prices. Due to this inefficiency in transferring of price movements, the farm gate prices for paddy in Rwanda did not immediately come under pressure.

However since the consumers had been paying more than the global rice price; EAC countries such as Kenya and Tanzania reduced their CET rates to 35% during the deceleration stages of crisis. This has caused trade distortions as non-EAC rice started flowing through these countries into other EAC countries. Effective July 2013, the CET rates have been trimmed from 75% to 30% in Rwanda as well. As the global rice prices continue to fall till date; it has become impossible for the Rwandan markets to maintain the high price levels. The recent reduction in CET rates in EAC has further broadened the prospects for increased flow of the imported rice which is relatively cheap and more competitive. This has created a market anxiety amongst the actors along the rice commodity chain and hence has slowed down the flow of local paddy into the mills in Rwanda.

Thus, the present crisis in Rwanda's rice commodity chain appears to have been triggered by the inability of local markets in efficiently transferring the movements in global prices. This in turn is due to a combination of factors such as higher costs of local production (and hence the higher farm gate prices), rising consumer demand, the spill-over effects of global food price crisis, and non-coherent regional tariff and trade policies on rice.

## 2. Preamble

Rice is one of the major staple food crops in Rwanda. Recent household surveys amongst urban- and rural populations in Rwanda (EICV3; Enquête Intégrale sur les Conditions de Vie des Ménages) in 2010<sup>1</sup> reveal that rice constitutes 6.9% (local rice (3.7%) and imported rice (3.1%)) of total food purchases (next only to Irish Potato and dry beans) made by Rwandans. Rice has thus dramatically displaced traditional food commodities such as cassava, banana and corn. As incomes and lifestyle of Rwandan population improves, rice provides a viable choice as a food by virtues of its long shelf life and the relative ease (fuel and time) with which it can be stored and cooked.

Rice was introduced in Rwanda in 1960s through missions from Taiwan, Korea and China in small scales. The initial success of growing rice crop in the swamps and inland valleys has quickly lured the interests of several local farmers and other stakeholders in agriculture sector. The short- and bold type (*japonica*) of grains from the missionaries gained popularity in local markets. Prior to the advent of large scale marshland reclamation; farmers and scientists had established that rice is the only crop that thrives well in inland valleys, especially during the rainy seasons<sup>2</sup>. Subsequently, the government of Rwanda established several rice schemes in the Southern and Eastern provinces in the late 1990s.

Until recently, the rice produced in Rwanda was largely sold in rural markets. In the mainstream urban markets however, the local rice did not appeal to the consumers. This was mainly due to the various shortcomings in production, handling and milling practices along the value chain. To counteract the deficiencies in production and quality of locally produced rice, the local markets have long been importing rice from other rice growing countries in the region and abroad. The active flow of rice as a global commodity into Rwanda has since started to gradually influence the price and standards of rice markets, and eventually the rice consumerism in Rwanda. Cheering globalization of rice trade by local markets has thus created newer opportunities and menacing threats for rice farmers in Rwanda.

Acknowledging the growing importance of rice as a staple food crop, the government of Rwanda declared rice as a priority crop under its agriculture investment portfolio. In 2000, the Ministry of Agriculture and Animal Resources developed an ambitious National Rice Program to increase rice production in Rwanda. By engaging researchers from Africa Rice Center (the former West Africa Rice Development Association) in four major schemes at Cyili (Butare) Bugarama (Cyangugu), Cyabayaga (Nyagatare-Umutara) and Rwamagana (Kibungo); six high yielding long grain (*indica*) varieties that were bred under rice growing ecosystems elsewhere in the world, were identified through a participatory varietal selection in 2002. Although the adaptability of these introduced varieties is often challenged by various biotic- and abiotic stress incidences in marshlands; the newly released varieties opened new vistas in producing long grain (*indica*) types in Rwanda. More importantly, these varieties provided significant gains in productivity and marketability of locally produced rice, and hence were widely accepted by rice farmers.

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<sup>1</sup> National Institute of Statistics of Rwanda (2011) The third integrated household living conditions survey (EICV3): Thematic Report; Patterns of Consumption

<sup>2</sup> Jones and Beye (1997) Report on rice as a viable food crop in Rwanda; West African Rice Development Authority

Rice is almost exclusively grown in marshlands at an altitude of 800 to 1200 m above the mean sea levels over two seasons; wet (A; March–August) and dry seasons (B; September–January). Owing to substantial investments by the government of Rwanda in the development of marshlands and value chain activities, the area under rice cultivation has significantly increased. Vast areas of hitherto uncultivated marshlands have been reclaimed; and old marshlands have been rehabilitated with improved irrigation infrastructure. Such an increase in expansion of area under rice cultivation has led to substantial increase in rice production in the country (Fig. 1). As the consumption demand for rice grows however; the local rice production has been able to meet only a part of the market requirements. In the past 4 years, the local rice production has been sufficient to a magnitude of only 51.8%. Between 2009 and 2012, the local markets in Rwanda had imported an average of 43,229 metric tons of milled rice mainly from such countries as Pakistan, Tanzania and Vietnam. Besides targeting self sufficiency in rice production, the rice sub sector in Rwanda also needs to challenge the imports by improving its competitiveness.

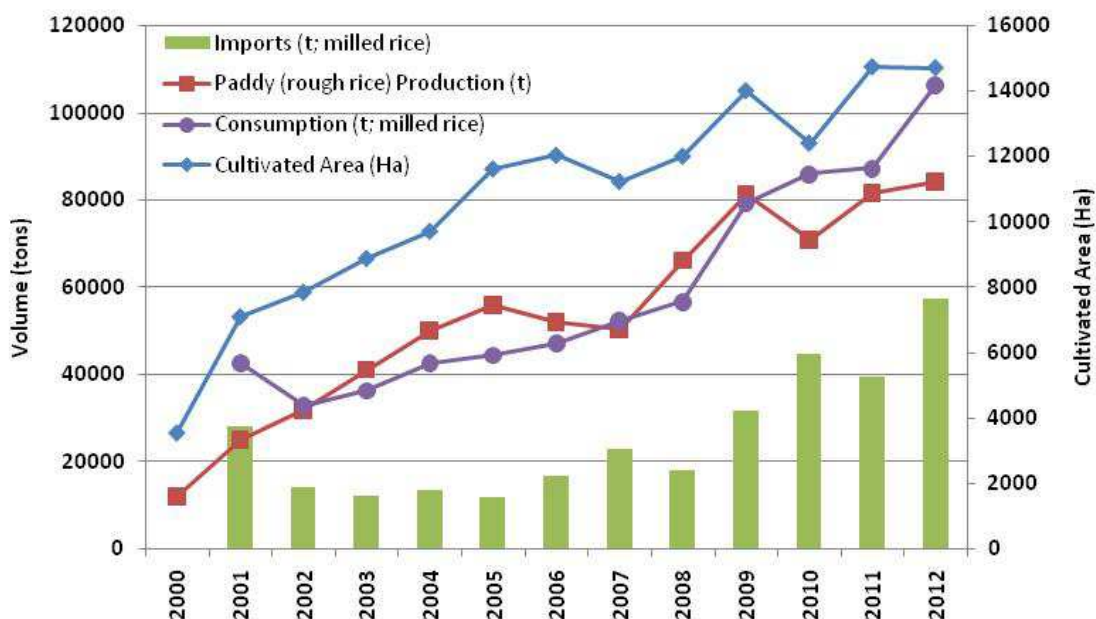


Fig. 1: Trends in production, importation and consumption of rice in Rwanda<sup>3,4</sup>

To raise the competitiveness of locally produced rice against the back drop of raising importation, the government of Rwanda established several policy guidelines for the rice processing industry in 2010<sup>5</sup>. Since the poor quality of rice processed in single pass mills located in several parts of the country was severely inhibiting the marketability of locally produced rice; such inefficient and sub-standard rice mills in rural areas were banned. The government encouraged private sector to take over the previously government owned medium (1-3 t/hr) to large (>3 t/hr) mills and in establishing newer mills with medium to large capacities according to policy guidelines. In 2012, the government of Rwanda established 3 newer state-of-the-art rice mills in rice producing areas such as Kirehe, Bugesera and Gatsibo districts. Through a ‘build and transfer’ model, the government sold 60% of

<sup>3</sup> Crop assessment surveys (2000–2012) Ministry of Agriculture and Animal Resources

<sup>4</sup> Rice importation records, Trade and Industry Section, MINICOM

<sup>5</sup> Enabling self sufficiency and competitiveness of Rwanda Rice (2010) Ministry of Agriculture and Animal Resources



shares of these mills to private investors; and the remaining 40% shares were provided to rice cooperatives in the respective marshlands.

The new policies also proposed setting of base price for paddy for farmers and allowed the sale of paddy by farmers through a registered network of traders and/or directly to the millers. Depending on their financial needs and accessibility, farmers sold the locally produced paddy to traders and/or millers. Increasingly however, the millers complained that the existence of traders distorted the supply of paddy to mills. Subsequently Ministry of Trade and Industry (MINICOM) reassessed the policy guidelines on the trading of paddy in the country. It was found that the selling of paddy by farmers to traders was leading to leakages of locally produced paddy from the system and hence was hampering the relationship between farmers, cooperatives and millers along the value chain.

The above findings prompted MINICOM to revise the policy guidelines in 2012<sup>6</sup>. The rice growing cooperatives must have legal status registered by the Rwanda Cooperatives Agency (RCA). Paddy shall be sold by farmers only to their respective cooperatives. Thus the new policy instructions from MINICOM banned individual rural traders. The cooperatives are authorized to sell and distribute paddy only to the recognized rice mills. MINICOM sets the price for short- and long grain paddy each season, in consultation with Ministry of Agriculture, Rwanda Agriculture Board (RAB), cooperatives and millers. The cooperatives needed to establish contracts only with government authorized millers who shall pay the cooperatives at a price that is set by MINICOM.

Despite the setting of farm gate prices and instructions on paddy trading, there is a lack of briskness in selling locally produced paddy between farmers and millers in recent seasons. Paddy stocks are increasingly being held at cooperatives; while millers, notwithstanding their capital investments, are not buying the entire local production. Ironically however, the local markets continue to import large quantities of rice from other rice growing countries in Asia and East Africa. Records show that during the period between January and June this year (2013), the total imports have already reached 33,221 tons of milled rice. On a half-yearly basis, this already amounts to 16% increment over the amount imported in 2012 (Fig. 1). This has created a paradox in the patterns of trading of paddy and milled rice in Rwanda. More importantly, this also raises serious questions on the long term sustainability of the rice sub sector. The urgent task at hand therefore is to comprehend and address the issues along the commodity chain. This forms the goal of this report.

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<sup>6</sup> Instructions on rice processing and trading; Minister of Trade and Industry; No: 19; dated 3<sup>rd</sup> November, 2012

### 3. Objectives & Methodology of Assessment

Given the importance of rice consumption in the country, the other actors in the market will supplement the inadequacy of local supply through imports. Thus inefficiencies in trading of locally produced paddy threaten the rice growers who depend on rice farming for their living; and millers whose business viability is dependent on the local supply of paddy.

#### 3.1. Purpose

The purpose of this report is to assess the underlying issues of rice commodity chain and provide perspectives on market competitiveness of locally produced rice. A general objective of this evaluation is to provide a basis for setting future policy and program directions for all the key stakeholders in the rice sub sector.

#### 3.2. Specific Objectives

Commodity chain activities involve various actors with multiple roles that can have a significant impact on producers' profitability and livelihoods. Any crisis along the commodity chain therefore needs multidimensional analyses involving several perspectives of actors along the production and supply chains. The specific objectives of the assignment hence include the following:

- i. Analyse the current context of trading of paddy and milled rice through discussions with the various actors along the commodity chain;
- ii. Assess the impact of new paddy trading policy instructions on rice production and on competitiveness of Rwandan rice in general;
- iii. Analyze all the relevant data available on production, milling capacity, imports and other surveys conducted along the rice value chain;
- iv. Based on the analyses, identify key elements that are causing the current crisis in paddy trading in the country;
- v. Draw lessons learned in other rice growing countries; for better planning and implementation of future activities in Rwanda;
- vi. Make recommendations on how to improve the competitiveness of locally produced rice in local and regional markets; and
- vii. Place the way forward within the frameworks of overarching national rice development strategies and policies as well as other cross-cutting issues

#### 3.3. Methodology

Analytical methods in assessment of issues along the supply chains of rice shall highly differ depending on the overall goal, socio-economic importance (subsistence or commercial) of the crop, target beneficiaries (actors), production systems (irrigated/rain-fed/upland), market dynamics and policy environments of the given geographical area (country). In Rwanda, rice is a major food crop and yet the crop is grown as a cash crop. This is mainly because the farmers who produce rice, owing to higher yield levels, keep only a small proportion (about 15%) of their total production for consumption purposes and sell the rest in the markets.

Given the commercial value of rice to the producers and other actors (processors and marketing men and women) along the commodity chain therefore, the economic value of production becomes a

significant factor in the viability of rice production. Monetary benefits are largely determined by the market prices and costs of production. For this reason, the assessment approaches under the current assessment needed to focus on the rice prices and other costs involved along the supply of rice into the local markets. While sufficient data are available on the local market prices and global prices of rice, data on costs of production, processing and marketing of rice available in Rwanda are less authentic and non-verified. Hence analyses conducted under this report represent a blend of quantitative- and qualitative analyses.

### **3.3.1. Quantitative Analyses**

Data on area under rice cultivation and production were obtained from the seasonal crop assessment surveys conducted by the Statistics division within MINAGRI. The data for milled rice production were obtained from the data for rough rice (paddy; with brown husks). First 10% was deducted for seed- and animal feed uses and incidental losses. From the remainder; milling recovery of 65% was assumed.

Data on importation of rice were obtained from the Trade and Industry Section at MINICOM. This includes the volumes of imports and exports (paddy and milled rice), costs and sources. Cost, Insurance and Freight (CIF) included cost of shipment up to the export terminal, insurance cost of cargo and freight cost up to Rwanda's port of entry. Free on board (FOB) by which, the exporter (in the source country) clears the goods for export and is responsible for the costs and risks of delivering the goods up until the port of entry, is generally not practiced for rice in Rwanda.

Seasonal farm gate prices for short- and long paddy grains set by MINICOM were obtained from the paddy pricing proposals from the trade and industry section. The paddy pricing proposal also lists the costs of production for the short- and long paddy grains and the cost of processing. The cost components (production and processing) estimated through a consensus process with various stakeholders were also obtained from the proposal documents. Monthly average prices of milled rice (Grade 1; 5% broken grains) in local Rwandan markets for the period between January 2011 and June 2013 were obtained from MINICOM. Monthly average prices of the same grade rice in other EAC countries for the same duration were obtained from facts and figures published from EAC Secretariat. Global prices of rice of Thailand (Grade 1; 5% broken) were obtained from [indexmundi.com](http://indexmundi.com).

Rural Sector Support Project (RSSP) had recently conducted surveys with farmers, cooperatives, millers, traders and consumers. Preliminary filtered data on consumer preferences, sales turn-over and perspectives of farmers and millers were obtained RSSP team that has interacted with the above mentioned actors. The data obtained from the team were then re-constituted and graphed to reflect the relevance in the context of this assessment. Household expenditures on rice (local and imported) in 2005-6 and 2010-11 were derived from EICV3 report, and converted to volumes (in Kg) at a constant 2005 price of rice in local markets.

### **3.3.2. Qualitative Analyses**

To identify practical difficulties, weaknesses and suggestions under the present policy environment, several actors along the rice commodity chain were engaged in discussions through semi-structured interviews. They include farmers' cooperatives, millers, importers, distributors, retailers and consumers. Progress and problems in implementation of current policies were inquired from such value chain supporters as the officials from MINAGRI, MINICOM, RSSP, RBS and Directorate of

Customs were also engaged in discussions through semi-structured interviews. The outputs from the above mentioned interviews were pooled, condensed and synthesized to draw the feed-backs on implementation of government policies on rice sub sector; and perceptions on what practical measures will further improve the implementation on the ground. The participatory approach of the various players along the rice commodity chain allowed comprehensive analyses of qualitative information which could not be measured through a statistical approach.

## 4. Findings

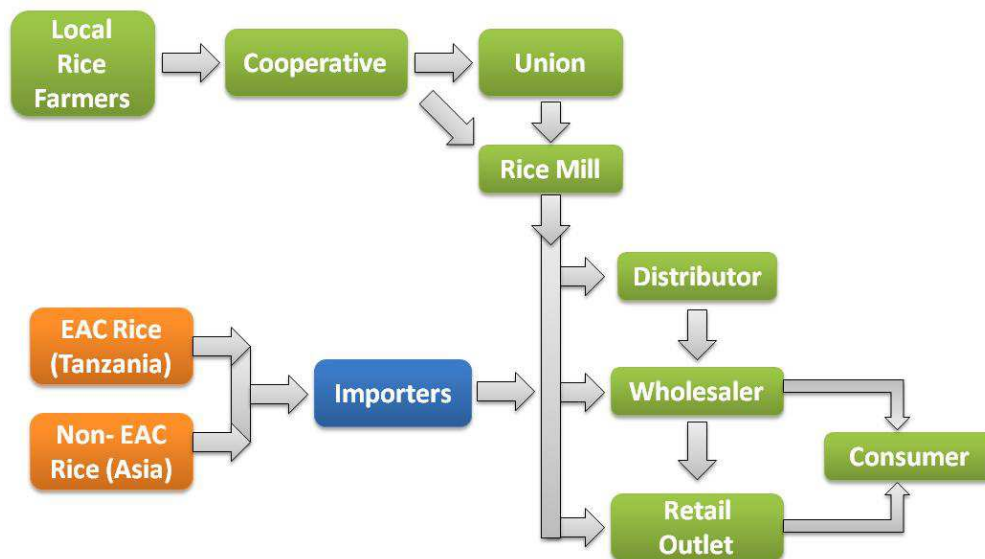
Analyses of the impacts, shortcomings and perceptions of the current policy climate over the rice commodity chain in Rwanda had led to several findings. These findings could be used to draw the lessons learnt from the present interventions and set a basis for future course of actions that shall help improve the productivity and competitiveness of locally produced rice in the markets. Some of these findings may also help in refining interventions in other crop sub sectors and thus may enable a broad set of interventions which shall facilitate the transformation process that has already been set in by various government initiatives under Vision 2020.

### 4.1. Rice Commodity Chain in Rwanda

Grain is the most valuable commodity of the rice crop. Although other by-products of the crop such as the straws and stubbles hold values; this report focuses on paddy (rice grain with husk) and the milled rice grain, and is referred to as the 'rice commodity'. The value of the paddy shall intricately be influenced by various activities along the entire production (value chain). However, certain on-farm and off-farm management practices influence the value of the commodity more directly. For instance, draining the fields at the right ripening (grain filling) stage of panicles and harvesting paddy at the right physiological maturity stage of the crop add significant value to the grain as a commodity. Since the moisture content influences the efficiency of milling process by reducing the breakage of grains; the value of commodity shall be increased through appropriate means of drying. Removal of debris, impurities and off-type grains through such practices as winnowing and sorting will add further value to the commodity in markets.

#### 4.1.1. Chain actors

Chain actors are players who directly contribute to the supply of commodity. Fig. 2 shows the various chain actors involved in rice commodity chain in Rwanda. The commodity chain for domestic rice starts with the *rice farmers* who produce the paddy and thus serve as the virtual suppliers of the commodity. Presently the farmers are responsible for drying, cleaning and packaging the paddy produced from their individual farms. Farmers generally dry the paddy under the sun (sun drying) to reduce the moisture content. Women members of the farm family play a major role in guarding the paddy grains while drying.



*Fig 2: Actors along the rice commodity chain in Rwanda*

After winnowing and packaging, the farmers bring their paddy to their respective *cooperatives* in which he/she holds a membership. Since the instructions from MINICOM have banned the rural traders, evidences suggest that the farmers generally sell their paddy only to their cooperatives/unions. Some, but not all, cooperatives have shareholdings (40%) in the rice mill located near their production areas. It is a norm in new rice mills (Kirehe Rice Company Ltd in Bugesera, for example) that were constructed and sold to private sector by the government under ‘build and transfer’ model. In such cases, the cooperatives have the obligation to negotiate the trading of paddy with their partly owned mills. In some other cases, paddy from one or more cooperatives is collectively sold by the *union* of cooperatives. Either the cooperatives or the unions collectively sell the raw paddy produced from their respective marshlands. Parboiling, a process in which the paddy grains (with husk) are soaked in water, steamed and dried prior to milling, is not practiced in Rwanda. Hence only raw paddy is supplied to *rice millers*. Almost all of the rice mills are modernized and have capacities of processing >3.0 tons of paddy/hr. The mills process the paddy into milled rice through a series of de-stoning, de-husking and polishing actions. Thus the millers add a major value to the paddy grains.

Besides the locally produced rice, markets in Rwanda also source substantial amounts (48.2%) of the domestic consumption requirements from other rice growing countries. Thus *rice importers* play a key role in the country’s rice commodity chain. Both imported rice and locally processed rice are collected by *distributors*. Through a business relationship with the millers and/or exporters located in other rice producing countries, the distributors purchase, stock and sell rice to prospective *wholesalers* and/or *retailers*. Wholesalers generally buy a large quantity of milled rice from distributors. It is through this high volume purchase, the wholesalers distinguish themselves from retailers. Retailers on the other hand often purchase smaller quantities and sell to *customers* through a relatively larger for margin/profit business channels in a price competitive market.

One of the local mills, Inter City Mills (ICM) Rwanda Ltd. owns 14 retail outlets (Lucki™) through which the processed rice is sold directly to consumers. Surveys conducted by RSSP suggest that the growing

dominance of mega-supermarkets in Rwanda as a retail outlet for rice commodity is yet to make a significant influence on rice consumers<sup>7</sup>. Consumers at the receiving end of the milled rice provide the pull force for the commodity chain. Recent household surveys<sup>1</sup> suggest that the demand for rice has been constantly rising amidst both rural- and urban populations of Rwanda in the recent past. While a thorough classification of rice consumers is not available in Rwanda, the trends in imported rice suggest that Rwanda's market is comprised of price insensitive and price sensitive consumers.

#### 4.1.2. Chain supporters

The government of Rwanda has been proactively supporting the local supply of paddy through various value chain activities and policies. The two major strategic intervention themes of MINAGRI in raising the supply of local paddy involve (a) expansion of land area under rice cultivation and (b) raising productivity of rice crop. Huge investments are being made in developing the marshlands in the country and transferring lands to rice growers. The government is constantly encouraging cooperatives in owning and maintaining the irrigation infrastructure and sharing of other natural resources in marshlands so as to sustainably raise the productivity. MINAGRI thus plays a pivotal role in establishing the *chain context* (enabling environment) for rice commodity in the country.

Crop intensification program (CIP), a national flagship program, provides an interface between MINAGRI and rice farmers<sup>8</sup>. Through CIP; MINAGRI addresses various issues along the rice value chain. By bringing various chain actors, CIP facilitates accessibility to markets (both input and outputs). Rwanda Agriculture Board (RAB), the national institution with a mandate for agriculture research and development, has long been serving as a source of seeds of improved rice cultivars. RAB is engaged in generating appropriate technology solutions for rice production. The major activities include varietal assessment, soil and water management, and pest- and disease control. RAB has recently established strategies for integrating its activities with farm value chain activities through innovation systems development approaches<sup>9</sup>.

Rwanda Bureau of Standards (RBS) plays an important role in implementing policies related to rice processing industry. RBS is responsible for adherence of general standards of premises, machineries, safety regulations for staff and environment, hygiene, and labeling requirements of finished products (milled rice, rice flour). RBS also play a supervisory role in ensuring the quality (grades and purities) of imported and locally processed rice. MINICOM sets overall trading regulations for rice commodity in the country. While MINICOM guides the stakeholders in reaching a consensus on farm gate prices; the prices for milled rice (local and imported) are set by the market forces. MINICOM also coordinates the alignment of national policies on rice markets with EAC's regional policies in order to mainstream the macroeconomic interests of the country. It oversees the implementation of government policies on in rice trade encompassing imports, exports and local markets.

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<sup>7</sup> Rice survey report (2013) – draft version dated 25 September 2013; Rural Sector Support Project

<sup>8</sup> Strategies for Sustainable Crop Intensification Program: Shifting focus from producing enough to producing surplus (2011); Ministry of Agriculture and Animal Resources

<sup>9</sup> Strategic Plan for Rwanda Agriculture Board (2013-2017) Innovating for Agriculture Transformation (2013); Rwanda Agriculture Board

#### 4.1.2. Linkages along the rice commodity chain

Strong linkages between various actors along the rice commodity chain can greatly improve the efficiency of the sub-sector. Linkages are evolved through relationships between various actors and shall be enabled by the various supporters described above. Given the huge influx of imported rice in the markets, the linkages between the local actors along the commodity chain define and shape the competitiveness of locally produced rice.

*Horizontal linkages* represent the relationships within the same group of actors. In general, the horizontal linkages within each actor groups along the rice commodity chain are strong and sturdy in Rwanda. For instance, the deep-rooted culture of cooperative formation in marshlands provides the foundation for linkages amongst producers. Rice farmers who share the natural resources in one or more marshlands jointly organize various logistics required for rice production. Thus the cooperatives provide a platform for strong linkages amongst actors. The presence of unions representing cooperatives from within a given region further unifies and amplifies the voice of rice producers. While the cooperatives and unions require further building of organizational and financial capacities, these forums provide representative entry points for public- and private actors along the rice commodity chain to interact with a large group of rice farmers.

Although not as strong as that of the producers, the linkage between rice processors is slowly emerging strong. With the exception of Inter City Mills (ICM) which owns mills at multiple locations in the country, other mills are owned by group of entrepreneurs in isolated locations. Nonetheless the meetings organized by MINICOM on farm gate prices every season have provided a new platform for the millers to meet with each other and establish relationships far and beyond their mill locations. Linkages amongst importers and within the group of distributors of rice in Rwanda are based on individual business relationships. Linkages amongst retailers are negligible except for price corrections/verifications. Though such linkages are informal, the limited geographical area of Rwandan markets tightly keeps the lid on any possible price wars, seen in larger markets elsewhere.

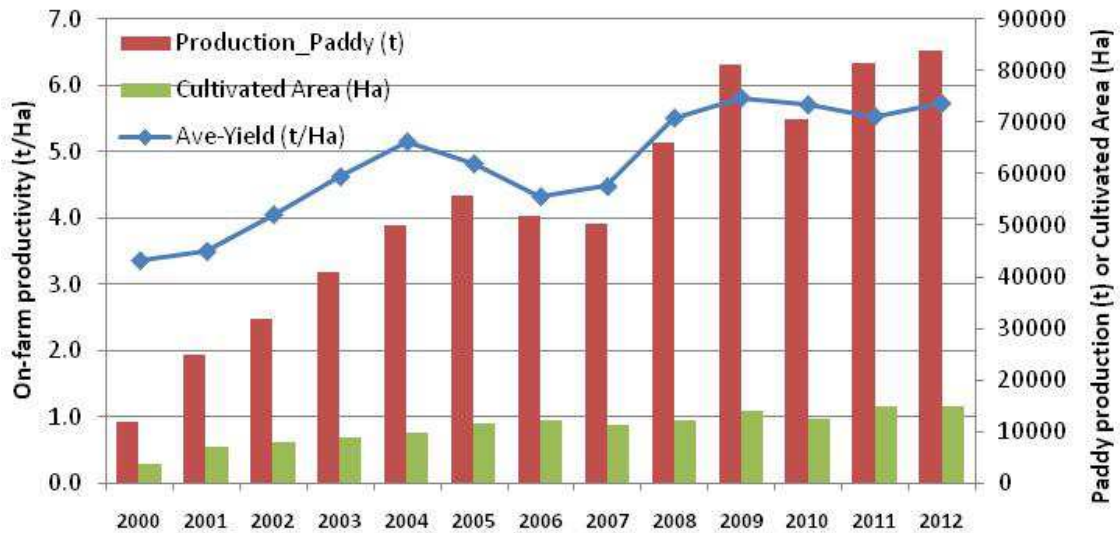
*Vertical linkages* represent the relationships between the actors. The vertical linkages along the rice commodity chain in Rwanda are relatively weaker than horizontal linkages. More importantly, the relationships are filled with mistrusts and misunderstandings. This is mainly because the actors individually establish rules of linkages depending on the relational power in their ties. The setting of farm gate price, for instance, defines the framework of costs and margins of the supply chain. Actors within the rice commodity chain hence expect every other actor along the supply chain to perform by the administrative expectations, opportunities and potential. Although these rules and expectations are often reinforced by administrative structures; there is disconnect between local- and external segments of rice commodity chains. For instance, the actors engaged in local rice production (farmers and processors) are not integrated with the dynamics in global rice prices and its growing significance in setting the rules in local markets. This shows weak vertical linkages between the various actors along the rice commodity chain in Rwanda.

#### 4.2. Trends in local rice production

Crop assessment records show that rice was cultivated over an area of 3,549 Ha in 2000. In 2012, the total area under rice cultivation has increased by more than 4-fold to 14,701 Ha (Fig. 3). Between the same period, the total paddy production has raised by 7-fold from 11,925 tons to 84,079 tons. The average on-farm yield level has increased from 3.36 t/ Ha in 2000 to 5.7 t/ Ha in 2012. The increase in



total paddy production thus was due to increases in both the area under cultivation and the productivity levels. Since 2008 however, the average productivity levels appear to have stagnated around an average of 5.65 t/ Ha. Nonetheless, such levels of national average yield are significantly above the global average of 4.3 t/ Ha<sup>10</sup>.



*Fig 3: Changes in area under rice cultivation, production and on-farm national average yield levels in Rwanda since 2000*

Although rice is cultivated in both wet (A; March–August) and dry (B; September–January) seasons; most of the rice is produced during the wet seasons. In 2012 for instance, 8,814 Ha (59.96%) were cultivated with rice during the wet season. During the dry season however, only about 5,887 Ha (40.04% of rice fields) of the total cultivated area were cultivated with rice. Due to such varied reasons as fallowing and inadequacy of water, time and labor; farmers opt for other food crops of significance to their households during the second season.

Recent surveys conducted by RSSP show that about 70% of the farmers grow short- and bold paddy cultivars; while 30% of the farmers grow long grain paddy cultivars. This is probably due to the higher occurrences of biotic- and abiotic stress incidences in long grain cultivars. The traditional short- and bold varieties such as Zhong geng, Yun keng, Xinan 175 and Yun yin 4 (collectively referred to as Kigoli varieties) are relatively better adapted to the various biotic and abiotic challenges in the marshlands.

### 4.3. Rice processing industry in Rwanda

Following a ban on inefficient small rice mills in the country, almost all the mills that are operational in the country are of at least medium capacity (>3 t/hr). Currently there are about 19 mills active in various parts of the country (Fig. 4). These mills are strategically located around the rice production areas. However, most of the existing millers are yet to chalk out clear business operational strategies for collecting the paddy produced in their respective locations. Since rice is almost exclusively

<sup>10</sup> FAO (2012) Rice Market Monitor; Vol. 15; Issue No. 2.



*Table 1: Supply and processing capacities for locally produced paddy across Rwanda*

	National	East	West	South
Total paddy production _Crop Assessment Survey (MINAGRI)	57,247	22560	14608	28133
Less 10% (seed, feed, losses)	5725	2256	1461	2813
Paddy Volume for Milling	51,522	20,304	13,147	25,320
Number of mills	19	6	5	8
Processing Capacity (t/hr)	36.6	17	8.3	11.3
Number of hours required for processing	1407.7	1194.4	1584.0	2240.7
Number of working weeks/year	50	50	50	50
Number of one-shift weeks (one shift/day; 40 hrs/week)	35.2	29.9	39.6	56.0
Round off	36.0	30.0	40.0	56.0
Occupancy rate (one-shift weeks)	72%	60%	80%	112%
Number of two-shift weeks (two shifts/day; 80 hrs/week)	17.6	14.9	19.8	28.0
Round off	18.0	15.0	20.0	28.0
Occupancy rate (two-shift weeks)	36%	30%	40%	56%

The present findings reveal that at the current local paddy supply potential; the available milling capacity in the country is generally more than adequate (Table 1). However, the physical locations of these mills in the production areas are not appropriately distributed. Hence any future policy decisions on construction and/or opening of existing milling facilities will require location specific analyses on paddy supply. Besides the supply and capacity estimates, the strategic and/or ease of access to mills by farmers in remote production areas also need to be addressed through future policy decisions. Nonetheless, if the mills opt for 2-shift week operation (2x8 = 16 hrs/day = 80 hrs/week); the mills in almost all locations will find shortage of supply and there won't be any need for further expansion of milling capacity in the near future.

Under the modernization initiative, almost all the mills are well equipped. In addition to the de-huskers, the mills have de-stoners, polishers, separators (head rice and broken rice), and blending and bagging facilities. In consistence with East African Community (EAC)'s regulations, the rice mills in Rwanda generate three different grades viz., Grade 1 (up to 10% broken), Grade 2 (10-25% broken) and Grade 3 (25-50% broken). Most of the mills also package the milled rice in 2, 5, 25 and 50 Kg bags. The bags display the names of variety and other technical details such as Grade, mill location (including Rwanda as country's name), number of lot, weight, and expiry date as suggested by RBS. By labeling the milled rice as 'produce of Rwanda' on the bag, the local rice mills generate branding for local rice. While some of the local mills undertake value added products such as rice flour and brewer rice, only a few mills are engaged in efficient management of milling by-products such as bran and husk.

#### **4.4. Trends in rice consumption**

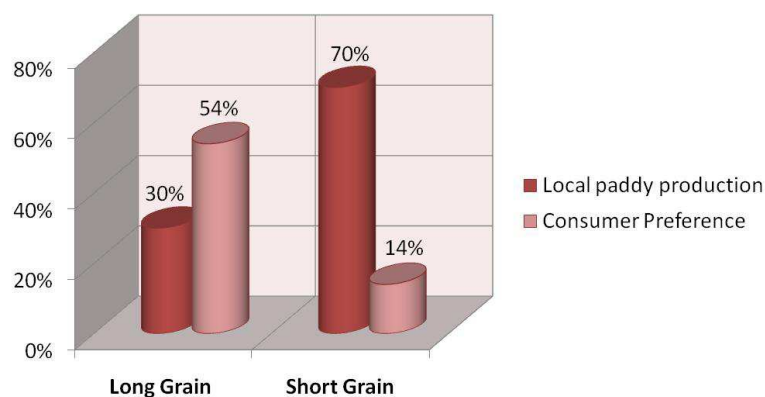
EICV 3 survey<sup>1</sup> shows that the consumption of rice has increased dramatically in the past 5 years. It now appears that the rural households spend more money on rice than the urban households (table 2). Whereas the rural households spend more in buying local rice (65.5%) than imported rice (34.5%), the urban households spend more money on imported rice (60.9%) than local rice (38.1%). Since the rural household expenditure on imported rice was not available for 2005; it is difficult to gauge the

influence of imported rice over local rice amongst rural households. However, a shift in balance in favor of imported rice could be seen amongst urban households, as the proportion of expenditures on imported rice has increased from 46% in 2005 to 60.9% in 2010. Furthermore, the spending on imported rice by urban households has increased substantially by 157% while that on local rice has increased only marginally (34%). Interestingly however, the expenditure of rural households on local rice has increased by 167%. These results show that imported rice has made significant inroads into the household portfolios of both rural- and urban households in Rwanda. While the rural households appear to prefer largely the local rice; the urban households prefer largely the imported rice.

*Table 2: Household expenditures (RWF) on rice (re-constituted from EICV survey data<sup>1</sup>)*

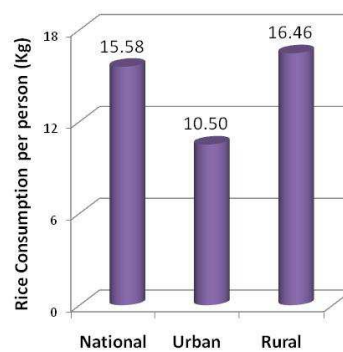
1	2005/06	2010/11	Increment (%)
<b>Rural households</b>			
Local Rice	7,440	19,900 (65.5% of total)	167%
Imported Rice	not available	10,500 (34.5% of total)	not applicable
Total	not applicable	30,400	not applicable
<b>Urban households</b>			
Local Rice	5,865 (54% of total)	7,860 (38% of total)	34%
Imported Rice	4,980 (46% of total)	12,800 (62% of total)	157%
Total	10,845	20,660	91%

Recent surveys conducted by RSSP show that 54% of the consumers in Rwanda prefer long grains, and only 14% of the consumers prefer short and bold grains. About 16% of the consumers prefer aromatic basmati grains and 20% of the consumers shall accept all types of grains and hence do not have any specific preference. These results show that there is a significant market space for long grain types (including basmati). However, only 30% of the local rice farmers cultivate long grain varieties and about 70% of the farmers grow short- and bold varieties. Given the small and relatively fair distribution of rice farm sizes in Rwanda, it is safe to assume that the local farmers are producing more of what is less preferred (short and bold type) in the market, and grow less of what is more preferred (long grain) in the market (Fig. 5).



*Fig. 5: Mismatch between local production and consumer preferences in local markets*

National survey on actual volumes of rice consumption is not yet available in Rwanda. However, from the available data on indirect parameters such as household numbers, household expenditures, market prices, an effort has been made here in this report to estimate a ballpark figure for the rice consumption volumes. As seen from the table 2; rural households spend an average of 30,400 RWF per year on the purchase of rice. This includes the amount spent on purchases of both local- and imported rice. The urban households on the other hand, spent an average of 20,660 RWF per year on the purchase of both local and imported rice<sup>1</sup>. This amounts to almost double (47.5%) the amount spent on rice in 2005 by the urban households<sup>1</sup>. Estimates show that the number of households in Rwanda was 2,421,587<sup>11</sup>. At an average Rwandan market price for rice in 2010 (0.95 USD/Kg)<sup>12</sup>; the urban households would have consumed an average of 36.86 Kg per year; and the rural households would have consumed an average of 54.24 Kg per year. Given the average household size of 4.8 members; this transforms into a national average of 15.58 Kg/person (10.5 Kg/person in urban areas and 16.46 Kg/person in rural areas; Fig. 6).



*Fig 6: Estimated consumption of rice (Kg/person) in Rwanda*

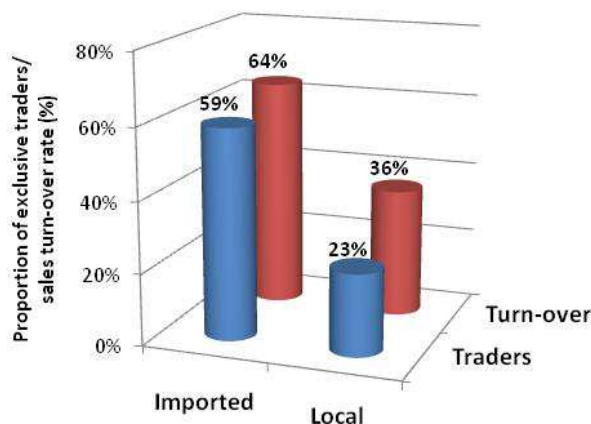
#### 4.5. Trading patterns

It is conceivable that the disparity in the local supply of long- and short grain paddy and the consumer demand (Fig. 5) can have serious consequences on the dynamics of local markets. Hence it becomes important to gauge the influence of imported rice on the marketability of local rice. Mainstream markets in urban areas (especially Kigali) have much closer business relationships with local mills and/or importers of rice produced elsewhere. Despite having mills located in the vicinity however, the markets in rural areas do not have stronger business ties with local mills. This may be due to the low- and fragmented volumes that the rural markets seek from the mills. Recent surveys conducted by RSSP reveal that the rural merchants complain about the biased marketing by local mills in favor of urban markets. About 59% of rice traders in the country exclusively sell imported rice. Only about 23% of traders deal with locally produced- and processed rice. In consistence with this observation, the turnover of imported rice was found to be faster amongst 64% rice traders. About 36% of traders find higher sales turnover for local produced rice (Fig. 7). Although further analyses would be necessary to associate the factors such as location of the stores, rice supply, product differentiation, and price sensitivity of the imported and local rice, these data indicate that the imported rice is

<sup>11</sup> Statistical Year Book 2012; National Institute of Statistics of Rwanda

<sup>12</sup> East African Community Facts and Figures (2012); EAC Secretariat (September, 2012)

preferred strongly by the traders; and is also positioned well amongst the consumers in the local markets.



*Fig. 7: Preference of traders and turn-over for imported and local rice*

Nonetheless, the fact that the local rice constitutes 65.5% of all the rice consumed by rural households could provide significant support for the volumes of locally produced rice (both short- and long grains) marketed. Although the RSP survey did not reveal the market volumes, since rural households represent 85.2% of the total households<sup>13</sup> in Rwanda, it is possible that the relatively larger consumption of local rice serves by rural households serves as one of the major driving forces for the marketing of locally produced rice. This emphasizes the need for closer linkages and business rapport between local processors and rural rice retail network in Rwanda.

#### 4.6. Demand Projections

Between 2005 and 2010, the consumption of rice in both rural- and urban households has risen significantly (Table 2). This shows that the demand for rice is on the rise. This also defies an earlier assumption that rice consumption would increase by 0.6 Kg/annum/person<sup>14</sup>. Based on this assumed rate, Rwanda’s total rice consumption should be around 9.6 Kg/person in 2010. Conversion of household expenditures data at 2010 prices suggests that the national average consumption stood at 15.58 Kg/person.

The increment in rate of rice consumption seen in the recent years could be due to a lower base level, raising income levels and changes in lifestyles. Going forward however, it is difficult to assume that the growth rate observed in rice consumption in Rwanda would maintain the momentum. Based on the rapid expansion of area under rice cultivation and import volumes, Rwanda’s National Rice Development Strategy (NRDS) predicted an average increase of 11% in consumption of rice between 2008 and 2018 (Fig. 8). The summing of volumes of locally produced and milled rice volumes (shown as blue bars) and imported milled rice (shown as red bars) in fig. 8 show that this prediction is fairly similar to the pattern predicted under the NRDS (Fig. 8).

<sup>13</sup> The third integrated household living conditions survey (EICV3): Main indicators report. National Institute of Statistics of Rwanda (2011)

<sup>14</sup> National Rice Program (2005) Ministry of Agriculture and Animal Resources

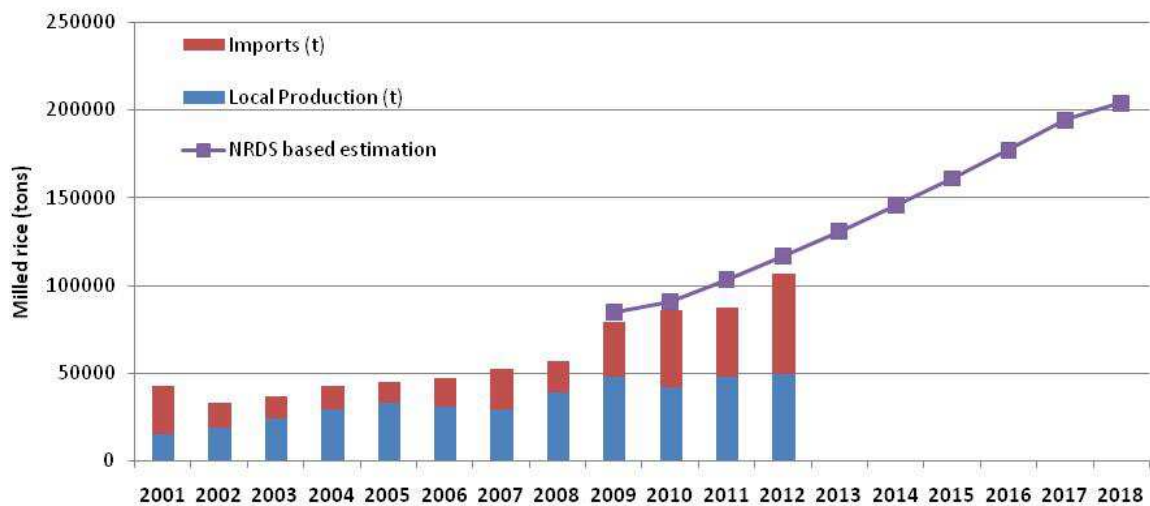


Fig. 8: Projected demand for rice and gaps in local production in Rwanda

This prediction suggests that the total demand for rice in Rwanda would increase to 204,110 tons of milled rice by 2018. This would imply that from the current level of production of 49,186 tons of milled rice. Thus the country would have to raise the local production by 4-fold to achieve self sufficiency. While import substitution shall be set as a long term objective, raising local production by increasing area under cultivation and raising productivity levels become urgent requirements for meeting the growing demand in rice consumption. Until the local production is substantially increased therefore, short- and medium term initiatives for rice sector should focus on expanding areas under rice production and improving productivity factors. Against the backdrop of current imports, substantial improvement in the market competitiveness of locally produced rice will also need to be nurtured.

#### 4.7. Farm gate prices

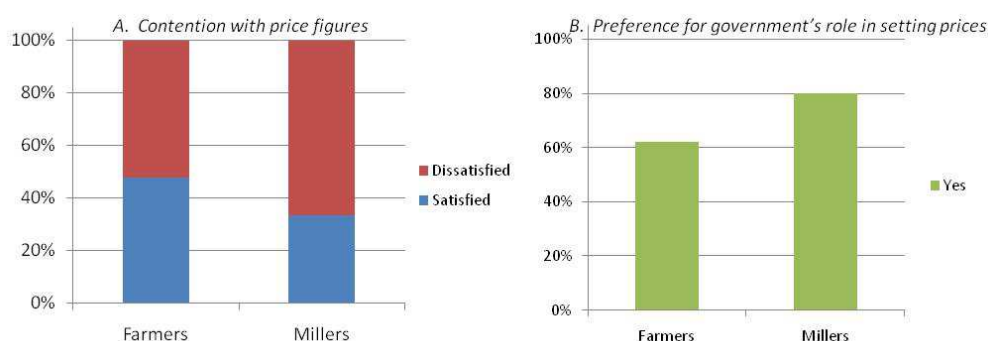
Following the instructions from MINICOM<sup>15</sup>, seasonal farm gate prices for paddy are set by MINICOM. In setting the farm gate price for paddy, MINICOM first collects the current basic costs involved in production and processing. The information is collected from value chain actors such as cooperatives and millers, and chain supporters such as RAB and MINAGRI. MINICOM then sets an arbitrary profit margin for the producers (up to 30%) and millers (up to 15%) over the average/total of all the costs involved. Table 3 shows the list of various cost items involved in calculating the local production of long grain paddy and processing of the locally produced paddy.

<sup>15</sup> Instructions on rice processing and trading; Minister of Trade and Industry; No: 19; dated 3<sup>rd</sup> November, 2012

*Table 3: Description of items and costs involved in production and processing of long grain paddy*

Production Cost Description (long grain)	Cost (RWF/Ha)	Milling Cost Description	Cost (RWF/Kg)
Purchase of Inputs	158,000	Paddy rice price	273
Nursery activities	36,360	Milling recovery (66%)	415
Farming Activities	500,400	Paddy packaging	3
Harvesting and Post-harvest activities	190,600	Paddy Transport to millers	5
Administrative cost	132,150	Labors	12
Total	1,017,510	Storage	1
Miscellaneous 5%	50,876	Electricity/Fuel	10
Total cost per Hectare	1,068,386	Packaging and administrative	12
Yield per Hectare (Average)	5000 Kg	Credit cost	3
Average Cost of Production (RWF/Kg)	214	Depreciation	6
Farmer Margin (27.3%)	58.5	Total	467
Paddy Price (RWF/Kg)	273	TVA (18%)	84
		Profit of 15% RWF/Kg	70
		Wholesale price	621

After drawing the baseline of costs and margins, MINICOM organizes a meeting with stakeholders to mutually agree on the suggested prices. Although a general consensus evolves in such meeting, the stakeholders have mixed feelings on the figures. The recent surveys conducted by RSSP with farmers and millers reveal that both the parties are not satisfied with the exact cost- and price values (Fig. 9). While the farmers feel that the farm gate price is low, the millers feel that the support price is high. Nonetheless they generally wish that the policy on setting prices by the government continue (Fig. 9).



*Fig. 9: Response of farmers and millers to farm gate prices (A) and the price setting policy (B)*

It is felt that under a ban of petty traders in rice production areas, the rice farmers were unable to negotiate with millers. With little capital, most of the farmers and cooperatives often undertake credit from financial institutions for the purchase of inputs and had little or no understanding of cost implications in the trading deals with millers. The farmers also lack market information to gain any influence in negotiations. In the absence of small mills, it will be difficult for a medium- or large sized mill to negotiate with individual smallholder rice farmers spread over a wider marshland area. This

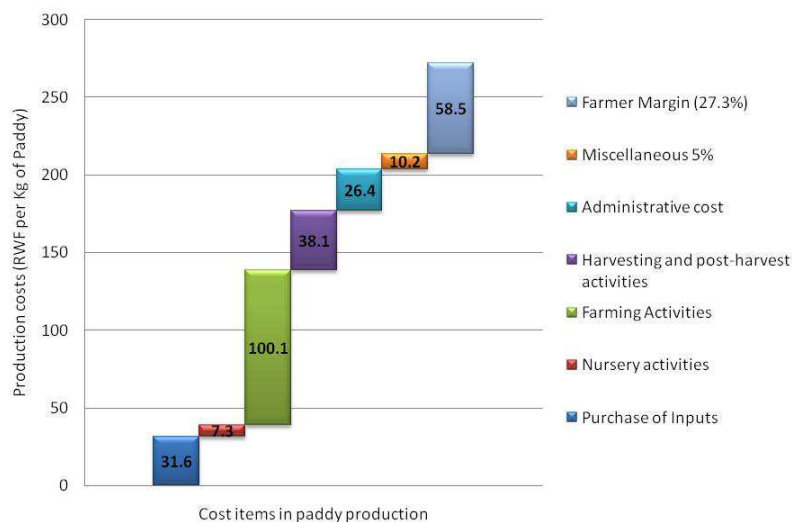


makes the margins small and involves greater risks from a business point of view. Besides improving the efficiency of milling, the larger economies of scale could also substantially improve the market competitiveness of locally produced rice.

The present contention on price figures however could be due to profit motivation by both the parties (farmers and millers). Nonetheless, the underlying sustainability issues at both farmers' and millers' ends shall not be ignored. Since rice has attained a stature of global commodity, a comprehensive understanding of these issues is paramount for the viability of rice sector in Rwanda. In the following sections, internal and external environments influencing the trends in costs and prices of Rwanda rice are discussed.

#### 4.8. Costs of production

Farm gate prices for paddy can directly influence the market prices of milled rice. Hence it is important to identify the major components that contribute to the total costs of paddy production. According to the estimates shown in table 3, the farming activities (labor costs) contribute 38% of the total costs (Fig. 10). The harvesting and post harvest activities involving labor contributes an additional 14% of the total costs. This suggests that development of appropriate labor saving technologies is an important element in reducing the total cost of paddy production and thereby improving the profitability of rice farming in Rwanda. Administrative costs involve the fees paid by the farmers for using the marshlands. Although this amount considerably varies between marshlands, on an average, it contributes to 10% of the total costs of paddy production (Fig. 10).



*Fig. 10: Break down of costs involved in paddy production in Rwanda*

Since fuel and other farm inputs such as fertilizers and agro-chemicals used by rice farmers in Rwanda are imported from other countries; the capital cost for inputs and transportation costs are relatively higher in Rwanda. When the total cost of paddy production (as determined in establishing the farm gate prices) in Rwanda is compared to that in other rice producing countries in Africa and Asia, it becomes obvious that Rwanda's cost of production is significantly higher at 347.85 USD per ton (Fig. 11). The relatively high cost of production could potentially reduce the price competitiveness of locally produced rice against the imported rice.

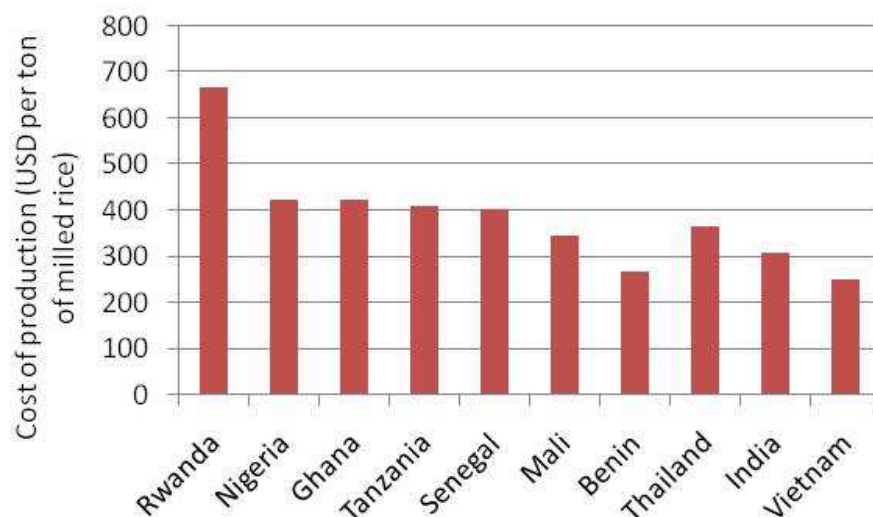


Fig. 11: Comparison of costs of production (per ton of milled rice) in Rwanda and other rice producing countries

#### 4.9. Global price movements for milled rice

Price for Thailand's milled white rice (5 % broken, Grade 1) is generally used as a baseline for rice prices in global markets. Owing to green revolution, the global supply of rice out-paced the global demand for rice. Despite rising populations and demand for rice, and higher incomes in Asia, rice productivity rose and production costs. As a consequence, the global prices for rice kept low in real terms at around 200 USD per ton until early 2000s (Fig. 12).

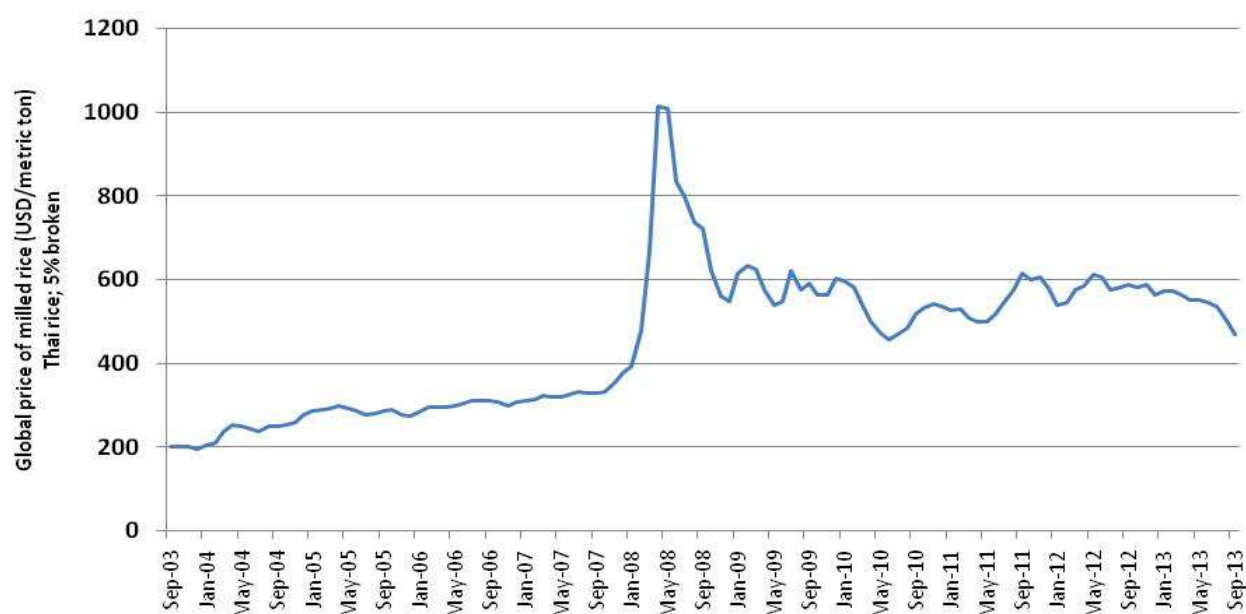


Fig. 12: Movements in global prices (monthly averages) for rice in the past 10 years<sup>16</sup>

<sup>16</sup> Rice monthly price data: Sourced from indexmundi.com on 22nd October 2013

In the light of the recent global food crisis however, the prices began to rise gradually. Between February and August in 2008, the rice prices spiked more dramatically before dropping to around 500 USD per ton. To a large extent, the increases in global prices of rice were also captured in the average rice prices in the national markets in Rwanda and other countries in the EAC region<sup>17</sup> (Fig. 13). Post global food price crisis however, the prices in Rwanda's markets did not fall to the extent observed in global prices.

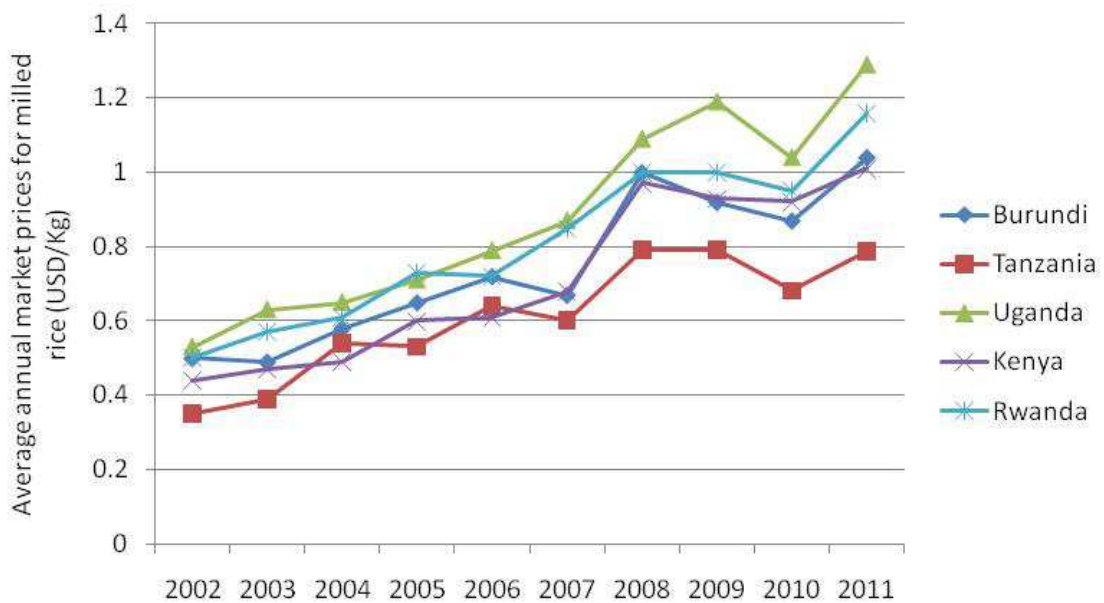


Fig. 13: Movements in average annual prices of milled rice in Rwanda and other EAC markets

Despite a relatively stable climate in global rice prices in 2011, the national average prices for milled rice in Rwanda and other EAC countries had climbed up and rule well above the global prices (Fig. 14). As observed earlier<sup>18</sup>, the local rice fetches lower prices than the rice from Asia and Tanzania. While the spread between the market prices of local rice and that of Asian rice have been gradually narrowing since 2011; the price for rice imported from Tanzania has shown severe fluctuations (Fig. 14). The narrowing of price spread between local rice and Asian rice might suggest that the recent policies on modernization of mills have improved the market competitiveness of local rice. However, a wider spread in prices between locally produced rice and imported rice should favor the sales of locally produced rice amongst price sensitive consumers.

<sup>17</sup> East African Community Facts and Figures – 2012; East African Community Secretariat; September, 2012

<sup>18</sup> Enabling self sufficiency and competitiveness of Rwanda rice: Issues and policy options (2010); Ministry of Agriculture and Animal Resources



Fig. 14: Comparison of rice prices in Rwanda markets and global markets since 2011

Notwithstanding the large public investments and resources devoted to the rice sub sector however, the higher rice prices have begun to isolate the rice consumers in Rwanda and in the region from lowering of rice prices seen by consumers elsewhere. Given the fact that a larger portion of rice available in the local markets are imported from other rice producing countries, the underlying reasons for non-parallel price movements could be due to less-coherent trading policies and patterns in the region.

#### 4.10. Impact of *ad valorem*/common external tariff (CET)

To encourage price competitiveness of locally produced rice, East African Community (EAC) introduced a special duty fee, generally referred to as *ad valorem tariff* (or) common external tariff (CET) of 75% for rice imported from non-EAC regions since 2005. As a member of EAC, Rwanda also has imposed 75% CET for rice imported from non-EAC countries. Rice produced in EAC member countries (Rwanda, Tanzania, Kenya, Uganda and Burundi) however are duty free and hence enjoy zero tariff rates on importation from within the region.

This policy had a direct effect on prices of both local and imported rice in Rwandan markets. Widely criticized as a protectionist policy, the 75% CET kept the prices of imported rice higher. This has helped balance the higher production costs of local rice. For instance, the landing cost (cost insurance freight; CIF) of milled rice from Tanzania is 269 RWF/Kg, and that from Asia on an average is 270 RWF/Kg. This is about the same as the farm gate price for locally produced paddy (with husk) set by MINICOM for the 2013 B season (273 RWF/Kg). With the imposition of 75% CET on Asian rice, the cost of rice reaches 476 RWF upon clearance from customs. This price then becomes comparable to the cost of locally produced and processed rice (prior to VAT; table 3).

The CET for imported rice has thus provided a level playing field and a framework for traders in setting market prices (of both local and imported rice), middlemen profits, and import volumes. This

policy has also enabled the locally produced rice to flow effectively into national mainstream markets. The recent policy decisions in modernizing rice mills and banning of inefficient mills in Rwanda have further helped the local rice industry sharpen the market competitiveness under the external tariff regime.

However the inefficiency in transferring of the recently observed lower prices in global rice market to national markets in other EAC countries (Figs. 12-14) prompted a revision of trading policies in other EAC countries. Under an EAC temporary exemption, Kenya first reduced the CET for rice to 35% in 2010<sup>19</sup>. In 2012, Tanzania reduced the CET to 10% to reduce market prices. These policy measures allowed Kenya and Tanzania to import substantial quantities of milled rice from non-EAC countries. Effective July 2013, the CET on imported rice from non-EAC countries has been slashed to 25% (trading purpose) or 10% (food security purpose) in Tanzania<sup>20</sup>; to 30% for Rwanda and Burundi<sup>21</sup> and retained at 35% in Kenya<sup>21</sup>.

The inconsistent tariff regimes for imported rice from non-EAC rice producing countries under the Directorate of EAC customs in the region could have begun to cause trade distortions. For instance, the data on local production (523,841 tons), estimated consumption (1,000,600 tons), import and export (450,000 tons) quantities of milled rice from Tanzania in 2011<sup>22,23,24</sup> suggest that non-EAC is already flowing through Tanzania (Fig. 15).

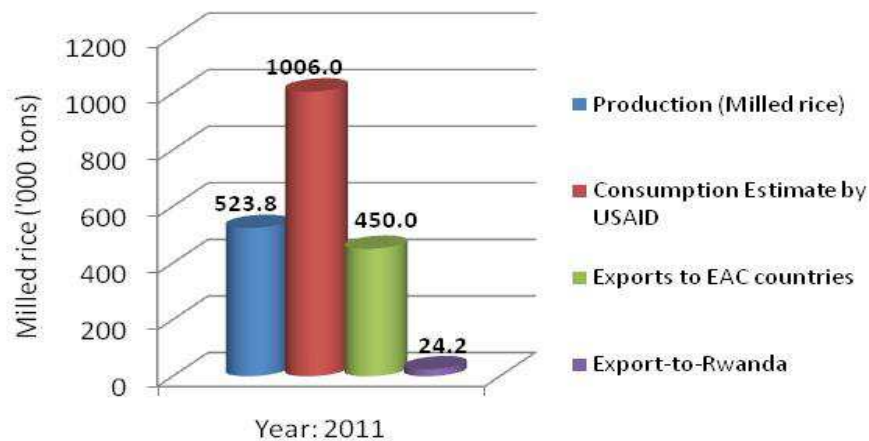


Fig. 15: Tanzania's rice production and exportation in 2011

<sup>19</sup> EAC Rice Import Tariffs and Food Security Update (2012) USDA Foreign Agricultural Service, Global Agricultural Information Network dated 4/26/2012

<sup>20</sup> <http://www.tra.go.tz/index.php/laws/115-tax-laws/214-summary-of-changes-in-tax-laws-administered-by-tra-as-per-budget-2013-2014>

<sup>21</sup> East African Community Gazette (2013) Vol. AT 1 – No. 10; dated 30<sup>th</sup> June 2013

<sup>22</sup> FAO (2012) Tanzania's rice sub-sector and value chain - Analysis & Review and Proposed Vision & Strategy for Improved Competitiveness & Growth

<sup>23</sup> Bill and Melinda Gates Foundation (2012) Developing the rice industry in Africa - Tanzania assessment July 2012

<sup>24</sup> USDA Global Agricultural Information Network (4/26/2012) EAC Rice Import Tariffs and Food Security Update

It is highly likely that the reduction of CET for rice in Tanzania and Kenya have greatly benefitted Kenyan and Tanzanian rice traders as they could import cheaper rice from non-EAC rice countries and supply to other EAC markets (including Rwanda) which do not have shipping access and/or similar rates of tariff reduction.

#### **4.11. Impact of Value Added Tax (VAT) on rice**

VAT is an indirect form of consumption tax. A VAT of 18% is applied on the purchase price of the buyer. It is generally passed along the commodity chain. For instance, when the trader imports rice from the seller; the importer pays 18% VAT to Rwanda Revenue Authority (RRA). Eventually when the importer sells to the distributor, the importer will offset the VAT that he/she paid to the government by collecting 18% VAT from the distributor on the sale price; and remits to the government the difference between the paid price and sale price. Thus the VAT will ultimately be paid by the consumers. The purpose of VAT is to generate tax revenues to the government.

In principle, VAT is added at every step when a value is added to this raw material. Hence VAT is not applicable in farmers' hands. When the paddy gets processed, VAT becomes applicable at mills. Presently however, a few rice mills in Rwanda have obtained VAT exemption. Nonetheless, VAT is applied more uniformly along the rest of the rice commodity chain i.e. when the milled rice is sold to distributors, wholesalers, retailers and consumers. Since VAT is applied on both the imported rice and on the distribution of locally produced rice, VAT does not influence the price spread between the imported rice and local rice.

#### **4.12. Impact of regional and global policies**

During the period of global food price crisis, several Asian countries swiftly changed their trade policies and patterns, and sequenced them in a timely fashion. The objective was to safeguard their local markets from the violent fluctuations in 2008. For instance, Thailand, Vietnam, India banned rice exports when the crisis unfolded (around March 2008) so that their local markets did not find shortage of rice supply. During this period, these governments also proactively purchased rice from farmers at prevailing market prices and stocked in warehouses to face off any future volatility. When the prices began to fall and stabilize (around 2010); India and Vietnam released all the stocks from the warehouses and actively encouraged private sector to export rice through liberal policies.

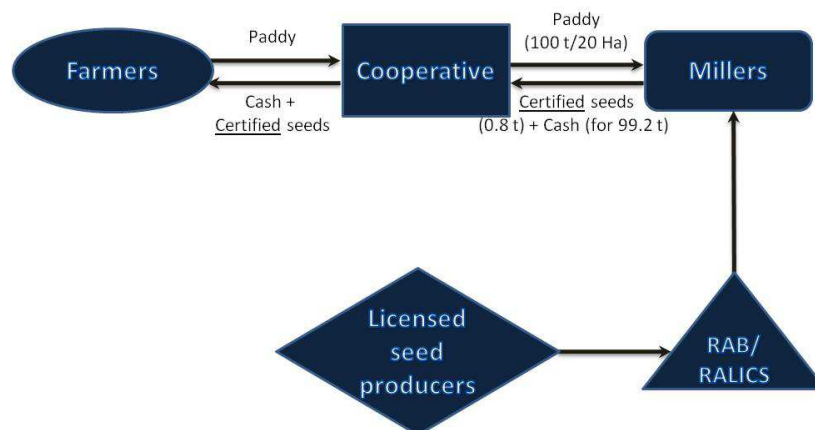
In Rwanda, as in other EAC member countries, the 75% CET tariff wall has allowed the prices for local rice to considerably appreciate since the beginning (2004) of global food crisis (Fig. 13). This has nurtured higher farm gate prices for locally produced paddy. However, since the consumers in EAC region continued to pay more even when the global rice prices were falling, tariff rates are now being reduced in the region. As Rwanda also has now begun to reduce the tariff rates; the market prices of imported rice are likely to decline. Furthermore, the global rice prices are showing a downward trend in the recent months (Fig. 14). The above average rainfall this year has heightened the prospects of above average rice production in traditional rice growing countries in Asia. With India and Vietnam further accelerating the release of rice stocks and Thailand on the verge of winding its pledging program, it is highly likely that the imported rice will exert additional pressure on Rwanda's farm gate prices for paddy.

## 5. Recommendations

The above findings show that while Rwanda has increased its total rice production and market competitiveness in the recent years, the local markets are not able to efficiently capture the recent changes in global movements (especially the decline) in rice prices. As a consequence, huge disparities come into existence between the rice prices in local markets and global markets. This is due to a combination of several factors that influence the various actors along the rice commodity chain. It is therefore important that appropriate measures are taken to address the issues in order to raise the viability of rice farming by smallholder farmers. The objectives of these measures are to improve the efficiency of supply chain of locally produced paddy.

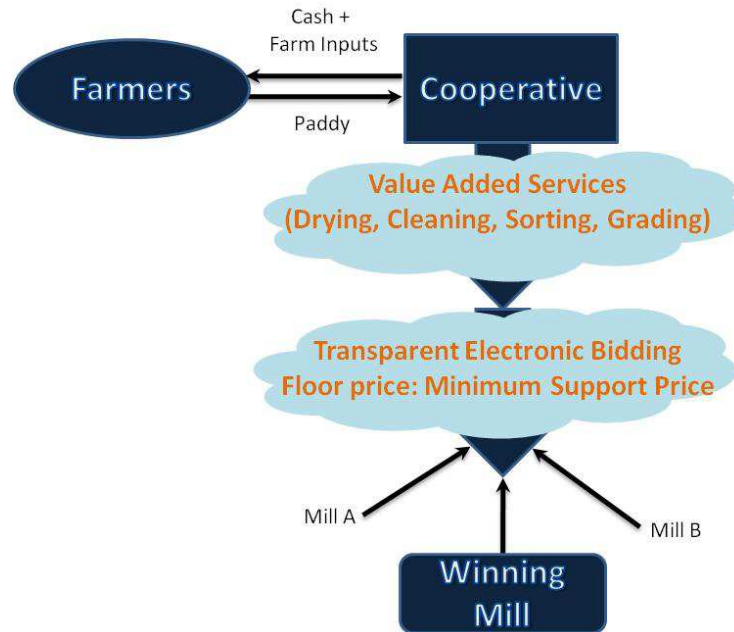
### 5.1. Reinforcing linkages between farmers and millers

The findings clearly suggest that strong and coherent linkages between various actors and supporters of rice commodity chain are necessary to create and consolidate the local rice markets. While safeguarding the interests of the different actors, in particular local producers, it is also important that Rwanda's rice farmers respond well to the regional and global market forces. Therefore establishing linkages between markets and farmers through the production cycles become important. Routing inputs such as seeds, fertilizers, chemicals and financial resources through millers shall reinforce the linkages. For example, distribution of certified seeds of improved market preferred varieties by millers shall enable the replacement of old and impure seed lots in rice production areas (Fig. 16).



*Fig. 16: Improving the quality of locally produced rice through linkages between producers and millers*

While the collective sales of paddy from a given marshland through the cooperatives/unions have improved the supply of paddy to the mills, the divergent production techniques practiced by individual farmers render the pool of paddy heterogeneity. Thus the quality of paddy lots are not uniform enough to ensure homogeneity in finished products (milled rice). This can be circumvented by introducing value added services at cooperative levels. Private entrepreneurs shall be encouraged to perform drying, cleaning, sorting and grading of locally produced paddy. By creating a differentiation of produces (paddy lots), the farmers might be able to bargain incentives (on top of the suggested farm gate prices).



*Fig. 17: Rising the quality of supply and incentives for the producers through value added services*

### 5.2. Production mismatch

Surveys show that about 70% of the rice farmers in Rwanda are engaged in production of short- and bold grain type, where as only 14% of the consumers prefer short- and bold grain rice. The reasons for such a disparity are not clearly known; it is possible that the adaptation of the existing long grain varieties to local production environments requires interventions through breeding and other crop improvement methods. It is also possible that the seeds of established long grain varieties are not adequately available and/or distributed in marshlands. Promotion of cultivation of long grain varieties through creation of awareness on the market demands and incentives for production may also reduce the current mismatch with consumer requirements. Until such a scenario is established, the government shall in the mean time promote exports of short grain rice produced in Rwanda to other regional markets where there is a demand.

### 5.3. Cost of production

The relatively high costs of rice production in Rwanda (Fig. 11) over that in other rice producing countries in the region and elsewhere reduce the price competitiveness of the locally produced rice in markets. In a globalized market however, there is a constant pressure for sourcing rice from production areas where the prices are low and local consumer preferred standards are met. Hence it is urgent that the costs (direct and indirect) of production are reduced and the cost efficiency is improved.

Direct costs on inputs (such as seeds, chemicals and fertilizers) shall be reduced through increased participation of private sector along the value chain. Subsidies on fertilizers and appropriate subvention schemes that shall reduce the rate of interests on credit availed to farmers and cooperatives shall also reduce costs while promoting the use of such inputs. Farming activities carried out by manual labor represent the largest component of the rice production cost. Appropriate mechanization options for critical stages of field operations and facilitation of mechanization in



marshland designs hence become important for improved adoption of mechanization and thereby for the reduction of production costs.

Raising on-farm productivity levels shall indirectly reduce the cost of inputs per unit of output. Although the current on-farm productivity levels are 5.7 t /Ha; long term on-farm trials conducted by IFDC suggest that yields of 8.6 t/ Ha shall be achieved in farmers' fields<sup>25</sup>. Reducing such yield gaps through adoption of improved soil and crop management practices by farmers shall therefore increase the cost efficiency of rice production. The rice cultivars grown in marshlands take about 6 months to complete its life cycle. Development of short duration varieties (<4 months) shall allow farmers to produce more number of rice crops in a given period.

#### **5.4. Farm gate prices**

The current price setting policy base its calculations on the local production costs (Table 3). The 75% ad valorem common external tariff policy has until recently propped the price of imported rice and thereby provided space for the local rice to compete in the market at the set prices. In a globalized market however, it is inevitable to continue to provide such protection. In a transition process, the tariff walls in Rwanda and other EAC countries have already begun to disintegrate. Eventually therefore it shall be expected that the rice imported from other low-cost rice growing countries will begin to exert pressure on the prices of locally produced rice.

With international prices falling further (Fig. 12), it will become paramount for MINICOM to reassess the scopes of setting farm gate prices and revisit its current methodology of basing the calculations on production costs. Since the intention of the current farm gate price policy in Rwanda is to provide a guideline value of paddy for farmers and millers; it is vital to factor in the global price levels, the current tariff regimes, local- and regional supply and demand ratios under the price setting calculations. This becomes critical as the locally processed rice is facing a stiff competition from imported rice grains that are produced in countries where the unit production costs are significantly lower than that in Rwanda (Fig. 11).

Setting seasonal farm gate price shall work well if it is instituted either as a subsidy or a price support, both with an intended effect of keeping the market price of locally produced rice above the competitive equilibrium level. In the absence of a public paddy procurement program in Rwanda however, it is difficult to expect the commodity chain actors to oblige and adhere to the price line. It may be worth considering a minimum/floor price over which the producers can bargain with millers based on their product differentiation (variety, purities, physical and aromatic features of paddy grains). Establishing a transparent and competitive bidding mechanism (Fig. 17), as in the auctioning of tea and other cash crops, might also help reduce the mistrust between producers and millers.

#### **5.5. Enabling environment for milling industry**

There is in general, very little appreciation of the rice industry as a business. EICV3 surveys clearly show that the consumers have their preferences, which the processors seek to satisfy. While the consumers demand a steady supply of good quality of Rwanda rice at reasonable prices, the farmers want the highest farm gate prices for their harvest, and the processors and traders of the milled rice

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<sup>25</sup> Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST) Project (2010) Crop Intensification Program (2008-2009) Evaluation Report by IFDC

have to bridge the expectations in between. This supply and demand structure along the commodity chain is often distorted by various national and regional policies. For instance, the recent reduction of tariff on rice from Asia will increase the importation of exogenous rice at lower prices than before. Opening of new mills in locations where already mills are strategically located could also breed unhealthy competition amongst millers and affect long term relationships amongst the various actors in the value chain.

While the mediation of linkages between millers and farmers through cooperatives and/or unions has generally been found desirable, the transparency in their relationships often falls short. Auctioning of paddy lots to mills through electronic bidding might improve the transparency and remove the hidden hurdles in supply of paddy to mills. The millers' demand for more uniform and improved quality of local paddy production also need to be addressed through appropriate policy measures that will allow millers to interact with farmers and cooperatives through legally sound contractual obligations.

Establishing feeder roads, storage structures and transportation logistics around milling locations will improve the operational efficiencies of mills. There is an urgent need for mills to engage in management of by-products such as bran, husk and straws. Conversion of straws into animal feed for example, shall provide additional revenues to producers and millers. Bran can serve as a source of bio-fuel in meeting the energy needs in rural areas. Besides raising profitability, such by-product management practices shall also lead to integration of sustainable management of natural resource management in marshlands.

#### **5.6. Tariff (CET and VAT) policies**

The recent tariff reductions in the EAC region have created a cocktail of incompatible elements for Rwanda's rice industry. Since these policy moves facilitate importation of cheap rice for consumers, maintaining a high local farm gate price for paddy and leaving the processors to market forces will increasingly become less tenable in Rwanda. This emphasizes the need for a thorough review of Rwanda's current policies on price setting, paddy purchasing obligations by private agencies and public programs, and monitoring and forecasting of international prices. It is also important to constantly fine-tune national policies in the context of regional and global policies; through detailed analyses on import and export figures and sources of rice in Rwanda and in the region.

Processors in Rwanda generally tend to prefer exemption of VAT for the locally milled rice. While this may theoretically reduce the costs and therefore the price for locally produced rice; it might be difficult to implement. It may be difficult to segregate the locally processed rice from the imported rice in the hands of traders and retailers; and the product- and hence the price differentiation may not be realized. Removal of VAT for locally processed rice also will cause revenue loss to the government. At 2012 level of production of paddy<sup>3</sup>, the loss of revenue to the government is estimated as 8.41 million USD per annum. Since VAT is eventually collected from the consumers, the advantage of VAT exemption for millers could only lessen the need for the working capital and the associated opportunity costs.

#### **5.7. Competitiveness of locally produced rice**

Consumer preference (and hence market competitiveness) is based on a combination of such factors as price, physical appearance (length, length/breadth ratio, color, broken, uniformity, impurities) and

chemical characteristics (aroma, flavor, shelf life, and cook-ability) of milled rice. While the cost efficiency in production and processing could influence the price, the physical and chemical features shall be enhanced through breeding and selection.

Recent trends in expenditure patterns show that the consumption of locally produced rice has increased by 167% amongst rural households and by 34% amongst urban households (Table 2). This shows that the marketability of locally processed rice has improved in the recent years. Despite a relatively large consumption of local rice in the rural households, the retailers in rural areas find the flow of rice from local processors as insufficient. It is therefore important for the local rice mills to exploit the rural markets by expanding their trade networks. The competitiveness of locally produced rice in mainstream markets shall be improved by ensuring homogeneity (uniformity) in the paddy collected from the producers. This can be attained through appropriate linkages between millers and farmers during the production. Value added post harvest activities such as adequate drying, cleaning and sorting of harvested paddy lots (segregation) based on physical and varietal features shall improve the marketability of locally produced rice.