



From	Agri Knowledge Centre
To	EMT Members, Agri Commercial Officers (ACO's)
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1. Summary – Quick Guide

Rice has been identified as one of the priority sectors that BPR could finance due to the strong support the sector receives from the Rwandan government and the very significant growth it has experienced over the past years.

Value chain:

- Rice production in Rwanda was 70,000 MT in 2011 on about 10,000 hectares vs. demand about 112,000 MT per year
- Production cost RWF 100 - 120/kg (2011).
- Competitive cost of production vis-à-vis other rice producing countries.
- Average yield of 5 MT/ha per season (depending on season and region).
- Rice needs to be processed before consumption.
- Just over 20% of the rice production reaches commercial rice mills through the cooperatives as a result of high level of side selling by both farmers and cooperatives.
- Market value of milled rice is relatively volatile (seasonality and overall crop performance) RWF 450-700/kg over past years, currently about RWF 700/kg. For current prices please refer to commodity data spreadsheet.
- Imported rice trades at a premium due to (perceived) quality difference.
- Main processors (ICM, SODAR, etc).

Main risks:

- Low quality of domestic rice
- Post-harvest losses
- Informal sales by farmers and cooperatives (high level of side-selling)
- Price risk
- Under-utilisation of the mills

Most of the above risks can be mitigated through choice of the right seed varieties, post-harvest handling investments, storage access, integrated value chains and/or off-take arrangements, market price monitoring and selection of proper mills.

Financing opportunities:

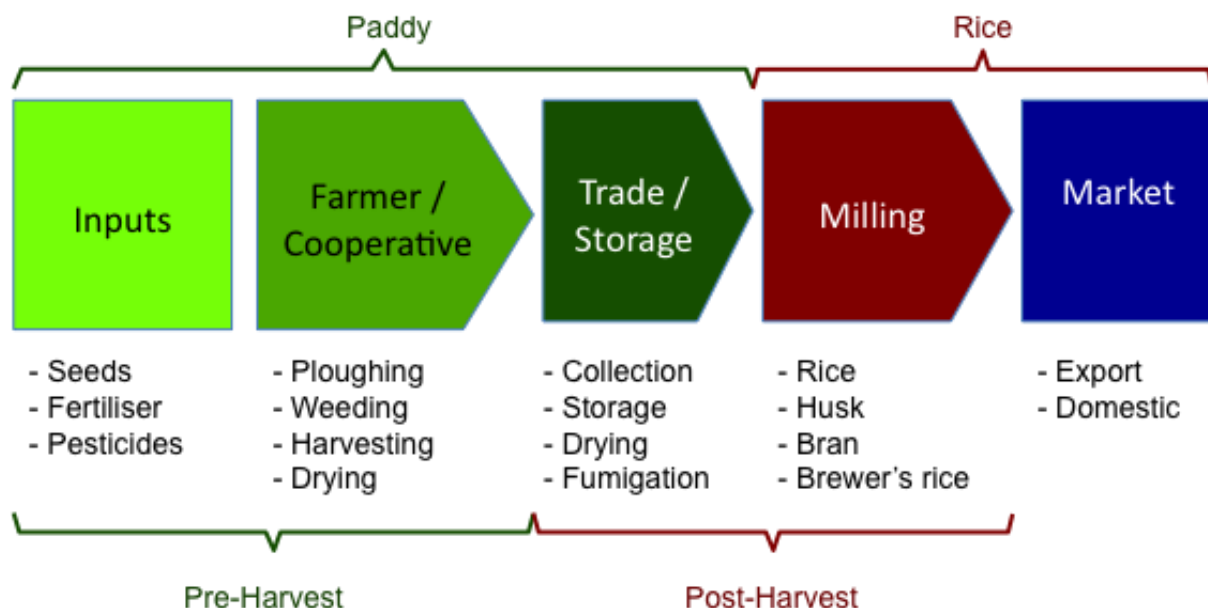
- Pre-harvest (input) finance opportunities.
- Post-harvest raw material collection finance is a significant financing opportunity in rice.

Requires:

- o Adequate storage facility (at cooperative / trader level),
- o Off-take contract with acceptable counterpart (typically a rice mill)

- Tri-partite agreement between cooperative / trader, off-taker and BPR
 - Financing up to (75% of) market value of commodities deposited in (cooperative) storage
- Post-harvest inventory finance is possible.
Requires:
- Adequate storage facility (preferably independently managed)
 - Reliable market price data source
 - Sufficient carry in the market (rice prices should increase after harvest in order to cover the cost of handling, storage and financing)
 - Warehouse / store management agreement, for example with double lock system
 - Periodical quantity and quality control
 - Financing of 50-60% of market value of stored grains and/or historic low prices.
 - Top-up or partial loan repayment in case of market price decline
- Asset finance may be used for equipment, transport or storage finance (Ref. Asset finance product description)
- Trade finance opportunities with import and/or export flows of rice. (Ref. Trade finance product description)

2. Rice Value Chain



When considering financing the rice sector, it is essential to understand the value chain structure and its related risks.

At the moment of writing this sector policy (2012), the rice value chain is already rather developed in Rwanda. This is mainly due to the fact that the Rwandan government has started supporting the rice sector in general and organising the rice farmers in a system of groups, cooperatives and unions. However, since most of the cooperatives and the unions are not financially strong enough yet, the value chain is not strongly integrated. As a result, in 2010, only approx 20% of the rice production reached the commercial mills through the cooperatives directly. The remainder of the production is retained as seeds, for own consumption and lost (post-harvest losses) (together approx 35%) and is sold to traders by the farmers and the cooperatives (approx 45%).

Rice has been identified as one of the priority crops by the Rwanda government in order to ensure food security and reduce imports.

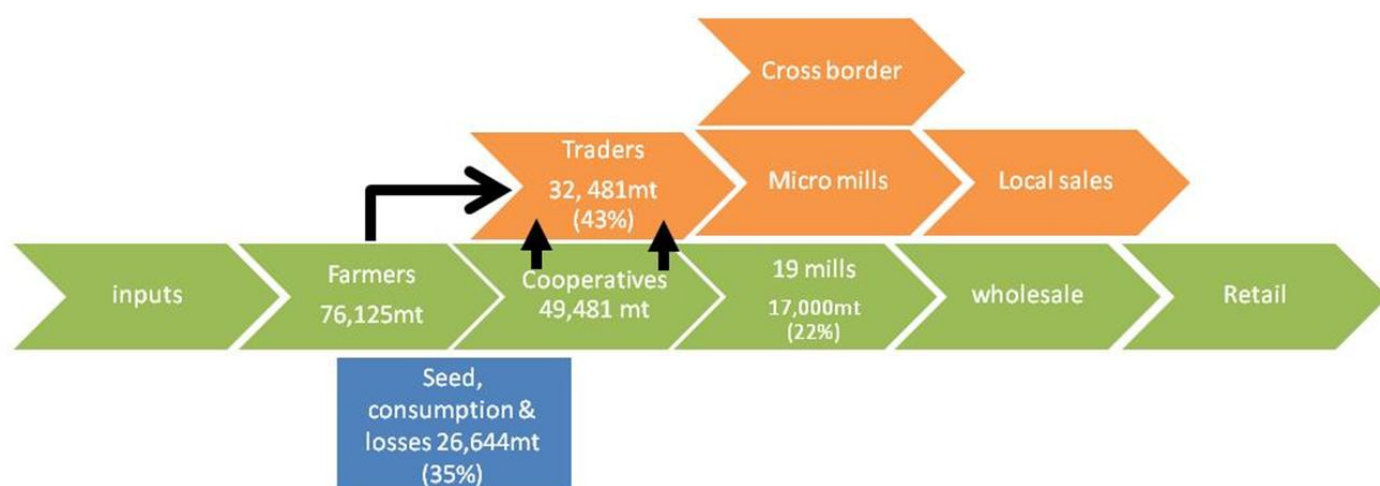
Rice has become a major staple crop in Rwanda. In the past 10 years, the total rice production has increased by 6-fold from 12,000mt in 2000 to some 70,000mt in 2010. This increase is mainly due to a parallel increase in rice area under cultivation and yield improvements. The total area under rice cultivation has increased threefold from approx 3,500 Ha in 2000 to some 10,000 Ha in 2011. However, the area remains small when compared to the potential: indeed areas that can be planted with rice are estimated at 66,000ha at the national level

In 2009, people engaged in rice cultivation amounted to 44,907. In Rwanda, rice farmers belong to a total of 60 cooperatives, distributed within 29 rice schemes across the country: Western (2), Southern (12), Eastern (13), and Kigali City (2). Rice growers operate within well-defined rice growing areas (INADES). The total area under cultivation amounts to some 10,000ha with a further 5,000ha under development.

However, local production lags behind the consumption needs of Rwanda. Currently, domestic production is only able to meet some 70% of domestic consumption. The balance is imported mainly from Vietnam, India and Pakistan.

The government of Rwanda aims to achieve self-sufficiency in rice production by 2016 and to substantially raise the competitiveness of Rwanda rice in local and regional markets by choice of proper varieties and improving the quality of the rice. This will require an integrated approach to solving key bottlenecks in seeds and fertiliser distribution, cooperative management, side-selling of paddy, poor post-harvest handling and informal trading and milling.

Distribution of paddy in the value chain



Source: field research Rabo Development in 3 districts, 19 mills

Note: milling capacity is based on 2 shifts (80hours/week), 50 weeks per year

The value chain in the rice sector comprises (i) Seed multipliers, (ii) Agri input suppliers (service providers), (iii) Farmers, (iv) Cooperatives, (v) Unions, (vi) Traders, (vii) Millers (viii) Wholesalers and (ix) Retailers. The above picture shows the distribution of paddy through the chain: only some 20% of paddy produced is milled by licensed commercial mills due to a combination of post-harvest losses, home consumption, seed use and side selling to traders.

Table 1: Recent changes in rice production (mt)

	2007	2008	2009	2010
Nyamagabe	0	0	0	0
Nyanza	2 444	2 670	5 332	1 704
Ngororero	0	0	0	187
Gakenke	0	0	0	0
Bugesera	3 413	6 686	6 578	3 903
Rwanda	61 701	82 024	95 105	67 661

Source: MINAGRI/FAO/PAM/FEWS/FSRP/PASAR, Agricultural statistics 1998A – 2010B, Feb. 2011

Table 2: Consumption (mt)

Year	Population (mln)	Consumption per capita (kg/year)	Predicted consumption (milled rice, mt)
2008	9.9	6.2	60,825
2013f	11.2	11.5	130,752
2018f	12.6	15.6	204,110

There are financing opportunities for BPR in the rice sector, such as Input Finance with Unions and Cooperatives, Raw Material Collection Finance for cooperatives and traders and Asset Finance for cooperatives and processors. Other financing opportunities may be considered in Inventory Finance and Working Capital Finance for cooperatives, traders and possibly also processors on a case-by-case basis.

International trade flows may also offer financing opportunities in trade finance.

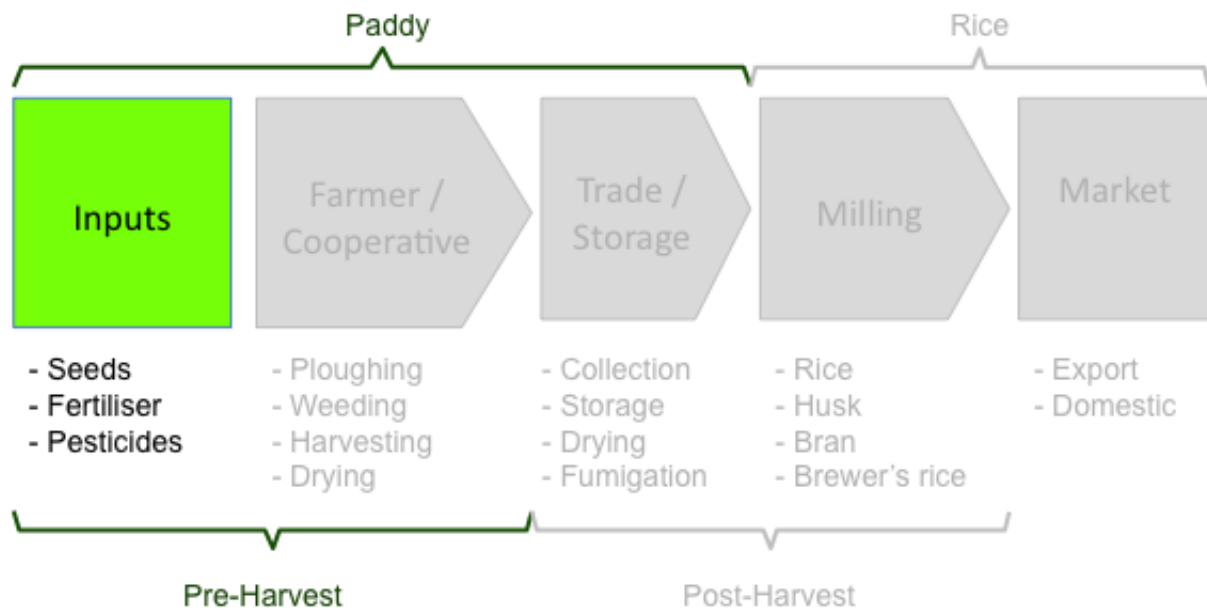
Input Finance may be an attractive opportunity to finance both seeds and fertilizers at either the level of the union or the cooperative depending on how the purchase of seeds and fertilizers is organised.

The rice value chain is furthermore exposed because of the limited availability of downstream infrastructure (like storage and post-harvest handling facilities). The government has recently set up the Rwanda Grain and Cereals Corporation (RGCC), a private-public partnership to support the grains and cereals market in Rwanda. The RGCC is proposing to offer off-take contracts at pre-agreed prices based on the farmer's production costs and distance to market. While this initiative will give market security to farmers, it may not encourage farm efficiency and/or cost competitiveness of Rwanda on the regional market. RGCC was not yet operational at the time of this report (June 2012).

The rice value chain is not yet fully integrated because farmers and cooperatives sell a large part of their produce to registered and non-registered traders, which in turn sell the rice to the rice mills (both commercial and micro-mills). Also, many traders use the mills just for tolling purposes paying a tolling fee to the mills and marketing the rice themselves. As a result, in 2012, only approx 20% of the rice production is reaching the commercial rice mills through the cooperatives and the unions.

The challenges in the rice value chain are essentially the improvement of the quality of the rice produced through, on the one hand, selection of varieties and, on the other hand, better post-harvest handling, storage and increase of the quality (standards) of the rice mills. The increased use of input finance by the unions and cooperatives can enable the farmers to buy better varieties of seeds. Inventory finance solutions for cooperatives, traders or processors may increase the linkages within the value chain, however the infrastructure (both post harvest handling and storage facilities) remains to be developed first.

a) Inputs (Paddy / Pre-Harvest)

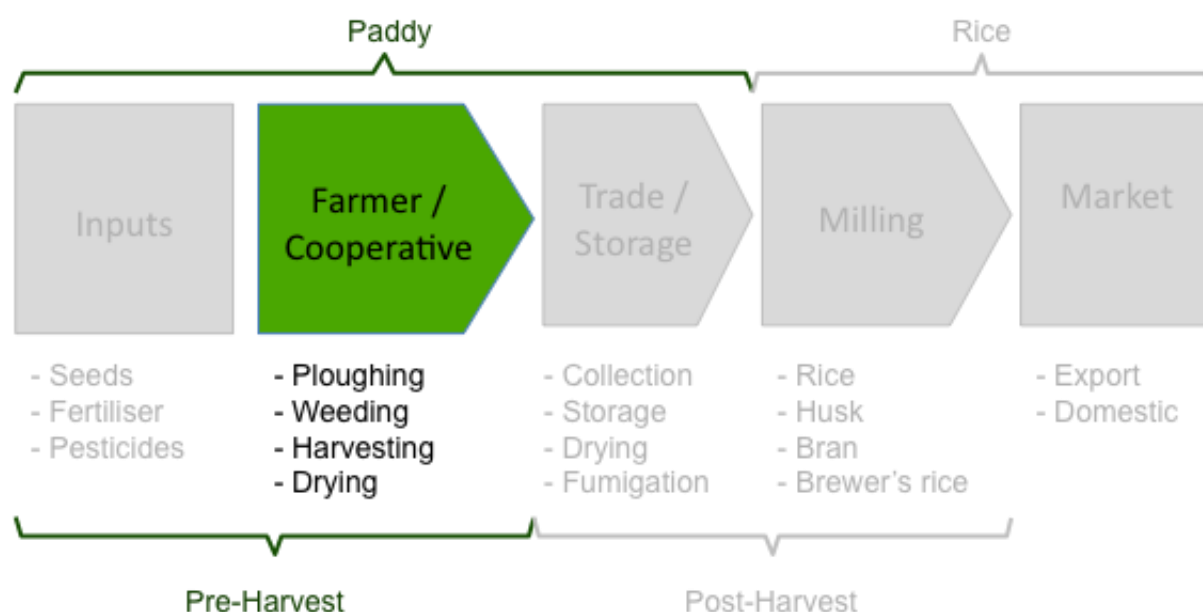


Through various schemes, the government has facilitated the inputs for rice production such as improved seeds, fertilizers, pesticides, tools and machineries. Most of the inputs currently reach individual farmers through cooperatives and the unions (e.g. Ucoribu). The farmers generally borrow the inputs from the cooperatives and/or the unions. At the end of the season, the cooperatives/Union collect the grain equivalent of inputs from the farmers.

Seeds are currently multiplied and distributed mainly through formal public institutions (some cooperatives have a license to multiply themselves). Multipliers of rice seeds are controlled and supervised by RAB (RADA, ISAR). The available rice varieties have limited adaptability to marshlands and need especially further improvement on early maturity, cold tolerance and resistance to pests and diseases. The government currently encourages private initiatives in seed multiplication and distribution of certified seeds.

Lack of adequate infrastructure such as in storage of inputs and distribution network for inputs in marshlands limit the participation of private sector. The high cost of fertilizers and lack of availability of fertilizers refrain farmers from using fertilizers. The soil fertility in marshlands is highly variable. However, farmers are currently advised to adopt standard fertilizer recommendations that are used in irrigated ecosystems. To improve the efficiency of fertilizer use and increase adoption, site-specific fertilizer recommendations and public private partnerships in procurement and distribution of appropriate fertilizers and manures are envisaged.

b) Farmer / Cooperative (Paddy / Pre-Harvest)



Rice is almost exclusively grown under irrigation in the marshlands of Rwanda. The average plot size is approx 16 are (1600 m²) and the farmers typically grow the traditional varieties and use limited amounts of fertilizers. As a result, the scope for raising productivity is often limited.

The high cost and lack of specifically suited fertilisers refrain farmers from using fertilisers in adequate quantity. The government is reclaiming new marshlands for the production of rice, e.g. 1750 ha in the Nyagatare district, including irrigation infrastructure funded by World Bank under RSSP. Rice farmers are receiving support from RAB (RADA) or specific projects implemented by MINAGRI (PAPSTA, PADAB) or NGOs.

In the absence of a strong extension network, rice growers in Rwanda mostly learn the production techniques from each other and through trial and error. The strong presence of farmers' cooperatives enables farmers to collectively access the inputs such as seeds and fertilisers. There is a need for better extension services.

Current (2012) rice production costs are estimated to range between 100 – 120 RWF/kg. Such price calculations are generally based on expected yields of 5 to 7MT/ha. On average, the yield per ha amounts to 5 MT/ha/year.

According to the results of field data collection in the areas of Nyarubogo Bugesera (2011), the average production cost based on an average yield of 6590 kg/ha is 112 RWF/kg (please refer to table below for detailed calculation).

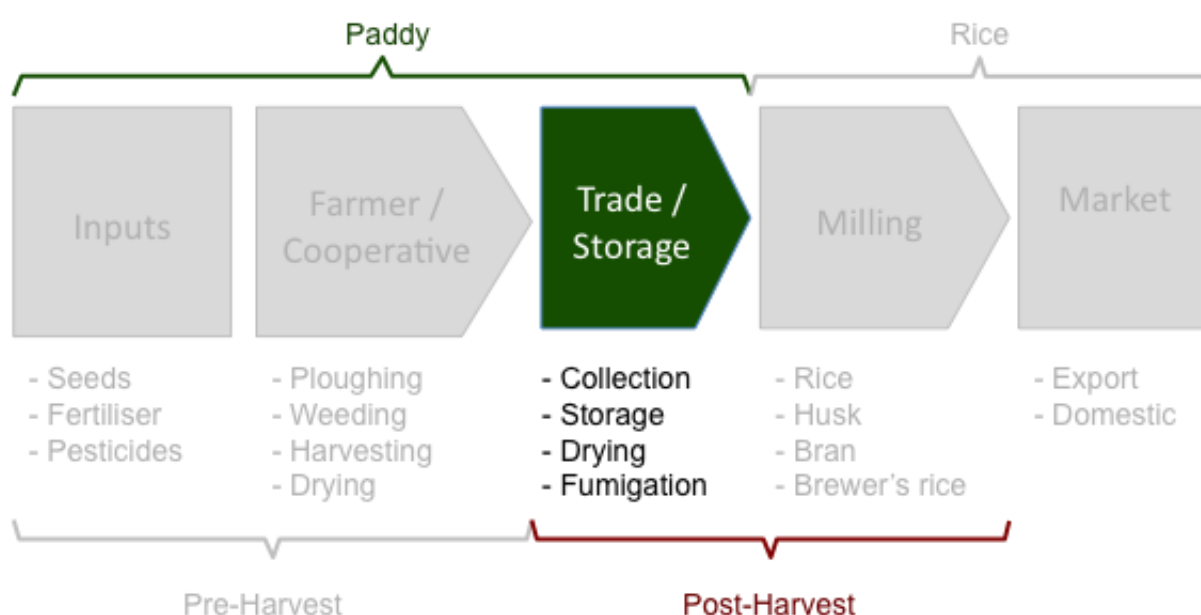
Table 4: Illustration of rice production cost calculation (please note calculation is based on yield of 6.590 kg/ha)

	Unit	Value
	Kg/ha	6.590
Average yield		
Average production cost	Rwf/kg	112.1
Field rental	Rwf/kg	2.2
1st ploughing and 2 nd ploughing	Rwf/kg	31.2
Organic manure	Rwf/kg	1.3

Seeds	Rwf/kg	1.9
Small equipment (bucket, basin, basket, sac)	Rwf/kg	0.8
Sowing (planting) labour	Rwf/kg	10.3
Fertilizer (NPK. DAP. Urea)	Rwf/kg	8.0
1st and 2 nd weeding labour	Rwf/kg	28.0
Manure spreading labour	Rwf/kg	2.1
Crop protection products	Rwf/kg	0.6
Labour for applying crop protection products	Rwf/kg	1.2
Harvest and transport labour	Rwf/kg	15.1
Post harvest treatment labour	Rwf/kg	3.0
Depreciation of equipment	Rwf/kg	0.9
Other: security and crop protection from birds	Rwf/kg	5.4

Source: FIDA, 2011

c) Storage - Trade (Paddy / Post-Harvest)



As a result of rice sales by farmers and cooperatives to traders (informal marketing), out of the 47,000mt rice produced in 2011 only 50% was collected through rice cooperatives. Only approximately 20% of the rice produced was sold to the commercial rice mills. The remainder (30%) was sold by the cooperatives to traders whom seem to be selling their rice mainly to micro-mills. As the quality of rice produced by the micro mills is generally lower than the quality of rice produced by the commercial mills, the bulk of Rwandese rice is sold as inferior quality rice mainly in up-country markets. The rice consumed in the cities is mainly imported rice commanding a higher price than local rice, due to better quality and possibly also other varieties.

Generally, farmers supply paddy rice to their cooperatives, which in turn sell to unions. The union would then sell to the mills. In some cases the unions are also shareholders in the mill (e.g. UCORIBU). In the absence of a union, the cooperative would sell directly to the mills. The mills would process and sell to intermediate traders, who buy bulk quantities of milled rice and sell it to retailers.

The growers are organized in an exemplary manner: first in a group (amatsinda) then in cooperatives (COPRORIZ, Inkingi...) and unions (e.g. UCORIBU) and finally in the

Federation at national level (FUCORIRWA). The paddy collection is an activity primarily reserved for rice cooperatives.

After keeping some of the harvest for subsistence, farmers sell their paddy. Those farmers who have obtained inputs from the cooperatives on loan sell their harvest to the cooperatives (this is in most cases mandatory as defined in the Articles of Association of the Coop). However the time taken by the cooperatives to pay cash and the low prices often force farmers to sell (some of) the paddy to unorganized rural traders and/or millers. There is a strong need to improve transparency through trading regulations and by facilitating predetermined contracts with millers/traders. Providing market information on farm gate prices and establishing linkage between the markets of inputs and outputs will improve marketing of locally produced rice.

d) Milling (Rice / Post-Harvest)



There are some 19 industrial rice mills in Rwanda with 3 new mills under development in East Rwanda (2012). To be able to run the mills efficiently, the mills need to run 2 shifts a day. Total milling capacity amounts to some 140,000 MT per year (i.e. double the total paddy production per year). The capacity of each milling machine varies from 0.2 to 3.6 MT/hour. Current capacity utilisation is estimated at some 30% only.

The table below illustrates the production costs established by FIDA surveys conducted in 2011.

Table 5: Value added to different links in the chain (Rwf/kg)

	Value
At rice grower level	
Average production cost	112.1
Average storage cost	4.4
Average marketing cost?	6.7
Rice grower margin	91.8
At the processor level	
Minimum buying price	215
Maximum buying price	260

Average buying price	240
What is the average cost of supply	10.8
What is the average cost of processing?	126,9
What is the average cost of marketing?	14.7
Processor margin	72.6
Average wholesale price for supplied product	465
At trader level	
What is the average cost of supply?	10.8
What is the average monthly cost of marketing	12
Trader margin	37.2
Retailer selling price	525

Source: FIDA, 8th – 24th March 2011.

The importance of post-harvest handling and processing is not sufficiently recognized at present. As a result, the quality in locally produced rice is low and has a low market value in comparison to imported milled rice.

There are no clear written regulations on milling operations. The mills are not routinely checked for the standards of operations and outputs. Small mills in marshlands generally produce Grade 3 rice. The government has recently banned such mills and has approved only those mills that can produce a minimum of Grade 2 rice.

The by-products from milling (husk, bran and brewers' rice) are not efficiently utilized by the mills, both the private and co-operatives.

Quality of rice can be improved through adequate supervision and/or regulation of milling operations. In addition, introducing technologies and raising the awareness on handling of paddy grains during the harvesting, drying, winnowing and storage phases by the producers can enhance the quality. Having recognized this trend, the Government has recently approved only seven mills (Kabuye, Bugesera-Ruhuha, Rwamagana, Gikonko, Bugarama, CODERVAM (Nyagatare), and Base) to operate in the country with adequate quality milling.

The key question for any mill in Rwanda is: to what extent is the mill integrated with paddy supply? Due to the overcapacity in the market, many mills are financially struggling. Only those mills that have a good grip on the paddy supply can survive long-term. These are typically the mills of ICM that work in a JV structure with the local Union. Or mills that have long-term relationships with preferred cooperative suppliers.

Other key criteria are:

- a) Should be licensed by RBS
- b) Good management (operationally, financially and marketing)
- c) Good financial records
- d) Good forward marketing arrangements
- e) Sound business plan: projected cash flows should suffice to repay the loan also in case of realistic set-backs

e) Market (Rice)



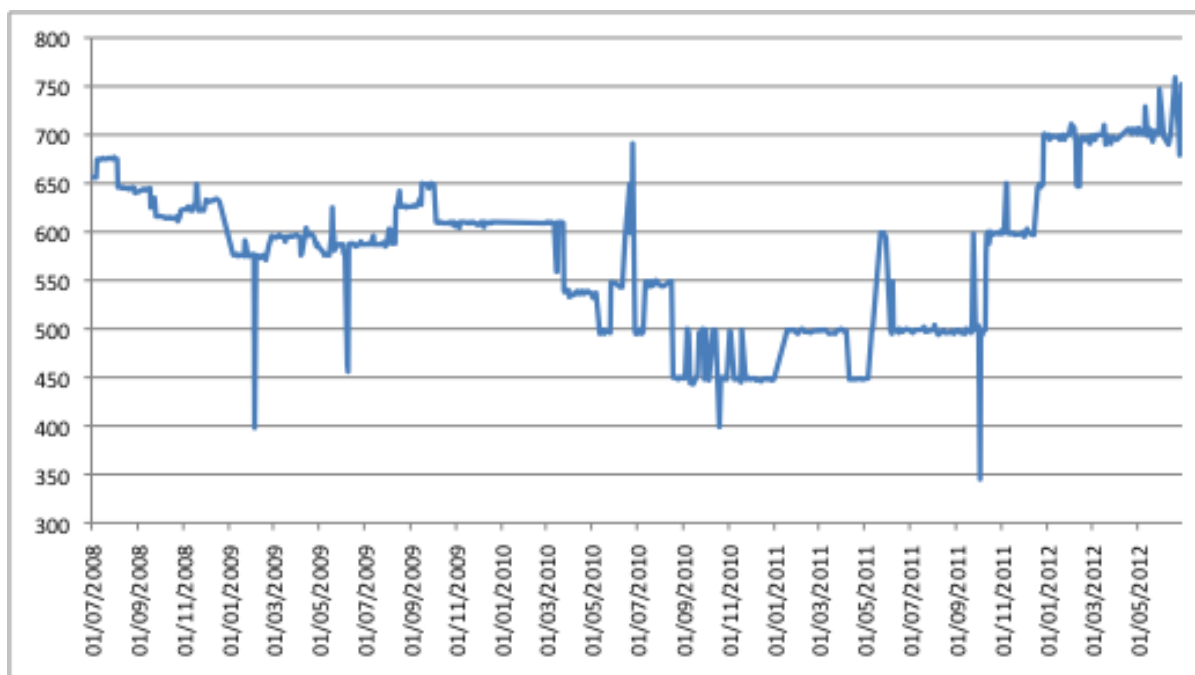
Rice produced in Rwanda is mainly consumed domestically. The rice is mainly consumed in the local rural markets as both farmers and cooperatives sell a large part of their rice to traders that in turn sell their rice to micro-mills. In the cities imported rice of better quality and higher price is mainly consumed. In the last 5 years, Rwanda imported an average of 26,736 MT of milled rice.

Market price information is relatively scattered, however through various platforms, such as e-soko and RATIN, it is possible to obtain regular national and regional price updates. The e-soko platform provides local retail prices, while RATIN provides national wholesale prices. The independence of these price sources could not be verified. The use of a (BPR) commodity data spreadsheet would be the most reliable price information source.

Rwanda, in accordance with its EAC membership, presently administers a tariff free rice imports from EAC countries and imposes a common external tariff for rice imported from outside EAC.

The National Programme for rice production gives the quantity of 0.6 kg per household per day and 3 days of consumption of rice in the week, or 15.6 kg per capita per year. The results of the field research indicate the figure of 19.9 kg per capita per year. Based on an average consumption of 18 kg per capita per year, needs for rice in the country in 2010 are estimated at $15.6 \text{ kg} \times 10,400,000 = 162,240$ tons.

Fig. 3: Historical Rice Wholesale Prices (RWF/kg) during 2008 – 2012



Source: RATIN

The above chart shows that significant price volatility can be expected from one year to another. At the same time, the price volatility within a season is relatively limited and there is generally speaking no carry in the market.

Due to the perceived quality difference, locally produced rice costs between RWF 650-700/kg while imported rice is priced at around RWF 900/kg.

3. Financing Needs

In the rice sector BPR focuses on the best cooperatives and Unions and mills. Individual smallholders are not BPR's main targets. Individual farmers are generally too small and are financed via the cooperative.

BPR should be careful with financing traders and wholesalers since the rice trade in Rwanda is still very much a cash business.

Any financing opportunity in the rice business should be considered on the basis of the cash flow that will be generated and how secure this cash flow is. Important aspects of the rice sector are that the value chain is not well integrated (high amount sales of paddy rice through traders) and quality processed rice is relatively low. Important risks are:

- Low rice quality
- Post-harvest losses
- Informal sales by farmers and cooperatives (high level of side-selling)
- Price risk (one harvest to the next harvest and limited carry in the market)
- Under-utilisation of the mills

	Input finance	Raw material collection finance	Inventory finance	Asset Finance
Farmers				
Cooperatives	X	X	X	X
Unions	X			
Mills			X	X

a) Input finance

Financing inputs like seeds and fertilizers through either a union or a cooperative (take care of not financing the same input twice!) could be an interesting financing opportunity. To ensure repayment of the loan, the cooperative or the union needs to have a good track record at collecting rice from its farmers, cooperatives respectively.

In case a cooperative is member of a Union, usually the Union will organise the distribution of agri-inputs (mainly fertilisers). As a general rule of thumb, fertilizer use is between 200 – 400 kg/ha and the price for fertilisers is typically 300 – 500 RWF/kg (2012 – Please refer to data sheet for up to date information). In order to make a calculation of the financing amounts, both fertilizer usage and market prices need to be checked and verified.

The performance risk in rice is mainly due to poor post-harvest handling and sales by the farmers and the cooperatives to the traders (and not through the unions).

Financing (rice) farming inputs has considerable risks involved and should only be considered if the cooperative or union has a good track record and the money flows through BPR accounts.

b) Asset finance

Cooperatives need to invest in post-harvest handling equipment such as drying floors and storage. Larger cooperatives can invest in central storage and artificial dryers. Some cooperatives want to invest in an own mill rather than selling their paddy by tender.

The first priority should therefore be to finance drying and storage facilities, subsequently to which other asset financing such as mechanisation and/or transport may be considered at cooperative level. One could also consider financing necessary investments in existing storage facilities in order to upgrade these to an acceptable level.

Due to current overcapacity of mills, BPR should be very cautious regarding financing the construction of new mills (except when a cooperative can assure its own paddy supply).

When considering an investment in fixed assets, the key criteria is that the investments generates sufficient additional cash flow for repayment of the loan and interest.

c) Raw material collection finance

There is a significant number of commercial rice mills in Rwanda, which currently find it difficult to secure the rice they require. This is mainly due to the cooperatives' limited ability to aggregate the production of their members because of lack of financing.

By offering raw material collection finance facilities to cooperatives, these will be able to pay the farmers directly upon delivery of the paddy. Thereby the cooperatives will improve their track record in collecting paddy rice and will become stronger players in the value chain. One of the conditions is that adequate storage facilities need to be in place (either owned by the cooperative or by a third party).

Provided acceptable storage facilities are available and off-take contracts are in place, working capital finance in the form of "Raw Material Collection Finance" is an attractive financing opportunity that should be further developed in this sector.

d) Inventory finance

Inventory finance is potentially an interesting financing solution for cooperatives, traders and processors.

When secure storage facilities are available, inventory financing may be considered. Given the lack of carry (seasonality) in the market, the attractiveness of such financing may be limited and financing should only be considered for conservative financing amounts (e.g. historically low prices). These financing structures will offer farmers access to financing for harvested crops, but also enhance their potential benefit by having the possibility to sell their produce later in the season with a reduced risk of post-harvest loss, if stored in adequate storage facilities.

Processors, in addition to the processing equipment that requires financing, need working capital to finance rice stocks either through domestic purchases (generally soon after harvest) or imports. Especially in cases of downstream linkages, such as ICM, where an off-take agreement can be put into place for part of the finished production in combination with security over the commodity, working capital financing should be considered.

Future development of inventory type financing could also be used to enhance the financing structure.

4. Strengths, Weaknesses, Opportunities & Threats (SWOT)

<p><u>STRENGTHS</u></p> <p>Suitable Ecological Niches High productivity (5.8 t/Ha) Government's commitment Organization of farmers Favorite Food Choice Favorable policies Rural and Family labor supply</p>	<p><u>OPPORTUNITIES</u></p> <p>Vast areas of untouched marshlands Special bowls for Premium rice Profitability Strong demand in local markets Open regional markets Off-shelf technologies Regional and International Initiatives</p>
<p><u>WEAKNESSES</u></p> <p>Inadequate integration of Value Chain Inadequate research and extension Low private sector participation Low mechanization Small farm size High post-harvest losses Standards of small mills Access to credit and market</p>	<p><u>THREATS</u></p> <p>Demographic pressure Soil fertility management Climate Change Access to water Pressure from pests and diseases Competition from imported rice Raising Fuel prices (input costs) Seasonal labor constraints</p>

5. Risks

The table below summarises the main risks and mitigants with regard to different financing opportunities the rice sector:

Key risks	Mitigants
Low quality of the rice	Choice of varieties, handling at harvesting, drying, winnowing, storage and regulation of milling
Post harvest losses	Handling at harvesting, drying, winnowing and storage
Informal sales by farmers and cooperatives	Integrated value chains, contracts
Price risk	Financing amount based on market prices, off-take contracts
Under utilisation of mills	Selection of mills

a) *Input Finance*

Finance solution to enable cooperatives or unions to acquire necessary inputs. This type of financing generally contains a relatively high element of risk due to the lag time between the loan disbursement to finance inputs and repayment of loan after the sale of the harvest. A risk that is specific to the rice sector is the high level of informal sales. This financing structure can be implemented with any cooperative or union that has a good track record with collecting rice or is already implemented by BPR (e.g. Ucoribu).

Risk	Description	Mitigant
Usage	Risk that financing is used for other purposes than purchase of inputs	Only disburse funds against fertilizers and seeds. Check distribution of inputs by unions and cooperatives to farmers.
Performance	Risk that the farmer or cooperative fails to targeted production yields and/or quality	(i) Adequate track record of production; (ii) Adequate track record of cooperative and / or union in collecting the rice; (iii) Storage should be regularly inspected for maintenance, procedures and commodity
Market	Risk that the cooperative or union is unable to sell the aggregated rice at a profitable price	Advance rate based on actual purchase price of inputs and of X% of market value to mitigate market risk in case of default of off-taker
Price	Risk that the commodity price drops significantly after financing is disbursed	Financing is only granted on actual purchase price of inputs and for part of X% of the market rice value (not the off-take price)
Payment	Risk that Buyer fails to pay or payment is not used to repay financing	Payment must be made against delivery through customer account with BPR (tri partite agreement farmers, cooperatives and BPR or union, rice mill and BPR)

b) Raw Material Collection Finance

Financing solution for cooperatives and traders to enable rice aggregation. This financing structure can be implemented with any cooperative and trader that has a trade relationship with a reputable off-taker. At the moment of writing this policy (July 2012), BPR was in the process of discussing this structure with one of the cooperatives supplying to ICM.

Risk	Description	Mitigant
Usage	Risk that financing is used for other purposes than rice purchase for aggregation	Disbursement of finance facility subject to raw material collection receipts
Performance	Risk that the cooperative or trader fails to meet its obligations in storage and quality	(i) Cooperative or trader must have adequate storage facility available and goods must be adequately insured; and (iii) Storage should be regularly inspected for maintenance, procedures and commodity
Market	Risk that the cooperative is unable to sell the aggregated grains at a profitable price	(i) Purchases should be backed by an off-take ¹ contract from a reputable party at an agreed quality-related price (ii) Advance rate of X% of market value to mitigate market risk in case of default of off-taker (iii) Facility only available during crop collection period (1 – 2 months) and for max stocks in store
Price	Risk that the commodity price drops significantly after financing is disbursed	(i) Disbursements are made only on the back of off-take contracts with agreed price; and (ii) Financing is only granted for part of (X%) of the historic market value (not the off-take price) (iii) Facility only available during crop collection period (1 – 2 months) and for max stocks in store
Off-take	Risk that the off-take defaults	Agreement should be with reputable counterpart
Payment	Risk that off-taker fails to pay or payment is not used to repay financing	Payment must be made against delivery through customer account with BPR (tri partite agreement cooperative / trader, off-taker and BPR)

c) Inventory finance (Warrantage or WHR)

Financing solution for farmer, cooperative, trader or processor. This financing structure is mostly of interest to farmers and cooperatives as it enables better post harvest handling, reduction of post harvest losses, stronger position in the value chain and possibly a delay the sale of their crop to maximise their revenues. It could be of interest for processors (rice mills) to enable them to secure their supply after harvest when the quantities are abundant and prices are usually lower. Financing is provided on the back of commodity stocks for an agreed percentage of their current market value (max 70%).

¹ See Off-take Risk

As the WHR system does not yet exist in Rwanda, “warrantage” can be used with caution given the limited right of the Bank over the secured commodity.

Risk	Description	Mitigant
Usage	Risk that financing is used for other purposes than rice inventory finance	(i) Disbursement of finance facility subject to storage or warehouse receipts; (ii) Release of stocks / warehouse receipts subject to repayment (goods / documents against cash)
Performance	Risk that the warehouse manager fails to meet its obligations in storage and quality	(i) Warehouse infrastructure and procedures should be acceptable and warehouse adequately insured; (ii) Warehouse operator should be independent or operated under double lock system or independent monitoring; (iii) Storage should be regularly inspected for maintenance, procedures and commodities; (iv) For formal WHR financing, performance of warehouse should be covered by Indemnity fund
Market	Risk that the commodity cannot be sold on the market	Generally commodities such as rice will always find a buyer if quality is correct and can be stored for prolonged periods if required
Price	Risk that the commodity price drops significantly after financing is disbursed	(i) Financing should be based on reliable market price information (e-Soko, own data sheet); (ii) Financing is only granted for part of (X%) of the rice value (up to Y% if backed by a fixed-price off-take contract) and/or based on government support price or historically low prices; and (iii) In case of significant market price decline, borrower should top up (add quantity of grains to reach maximum advance rate of X% or repay part of the financing)
Payment	Risk that off-taker fails to pay or payment is not used to repay financing	(i) Commodity is only to be released after payment is made or guaranteed (documents against cash); (ii) Payment must be made through Borrower’s account with BPR (tri-partite agreement cooperative / trader, off-taker and BPR) or Financing is to be repaid by the Borrower before the commodity is released

d) Asset finance

Financing solution for well-managed and financially strong cooperatives or processors. This kind of financing should only be considered to finance (the improvement of) post-harvest infrastructure and only when adequate post-harvest infrastructure (drying, storage, fumigation) is in place also other assets like mechanisation etc as otherwise “improved” productivity as a result of mechanisation may be lost after harvest.

Annex 1. - Technical specifications

The parameters that characterize the quality of rice are: grain size, colour, cleanliness, uniformity of grains, the % of whole and broken grains, taste, aroma, etc. We can distinguish the main types of rice as follows:

- PADDY is a grain of rice with its outer fibrous envelope which is not edible. So paddy is composed of two parts: a husk of rice and brown rice grain.
- BROWN rice or full rice ("Riz Cargo") is whole rice without its husk, but which retains the germ and the bran that makes it more nutritious than white rice.
- WHITE rice is husked and polished. It is enriched with iron niacin and thiamine so it recovers part of its nutritional value.
- RED rice with red bran layer (Bhutanese, Himalayan, Thai)
- BLACK rice with a thin bran layer (Balinese, Chinese, Thai)
- AROMATIC rice is more flavourful than other varieties due to taste (Basmati, Nerica, etc)

There are 3 types of grains:

- The long grain rice is three times longer than wide, it is lightweight, not sticky and easily separated (Basmati, Ferrini). This is the preferred variety by Rwandese consumers.
- The medium grain rice is 2 to 3 times longer than wide, shorter and more swollen than long grain rice (Arborio, Carnaroli, Nerica, Watt)
- The short grain rice or round grain rice is almost as wide as long: length less than 5 mm and 2.5mm thick (Vialone, Nano, Yun)

There are two types of rice grains that are produced in Rwanda:

- Short and bold (Japonica type)
- Long and medium (Indica type)

Almost all the imported rice grains in Rwanda are of the indica type. For both the aforementioned types, the Rwanda Bureau of Standards (RBS) in alignment with EAC standards classifies milled rice grains into three quality grades: Grade 1 (max 10% broken grains), Grade 2 (max 25% broken grains) and Grade 3 (max 50% broken grains).

Rice is often packaged in bags of 50kg and 25kg. For retail, rice is often packaged in plastic bags or biodegradable paper of 1kg, 2kg, 5kg, etc.

Annex 2. - Check list for rice cooperatives

1. How many members
2. Paddy production per annum (MT)
3. % of paddy supplied by members to cooperative
4. What is the minimum percentage that members must deliver?
5. How do they market the paddy (e.g. by tender)?
6. Do they have share in a rice mill?
7. Do they receive support from RSSP or other organizations?
8. Seed supply (do they multiply seeds themselves?)
9. Fertilizer supply (how organized, how financed?)
10. Post-harvest handling: do they have sufficient drying flours, central storage and drying facilities?
11. Do they have adequate transport?
12. Audited financials available?
13. Were they audited by the RCA? Can they share the report?
14. Capitalization policy?
15. Working capital needs?
16. Investment plans? If yes, what is financing plan?