



CSIR -FOOD RESEARCH INSTITUTE



ECONOMIC ASSESSMENT OF THE TAMALE PARBOILED RICE IMPROVEMENT PROGRAMME

For. FRENCH EMBASSY / FOOD SECURITY AND RICE PRODUCERS ORGANISATION PROJECT

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Summary

This report presents an economic assessment of the FSRPOP-Tamale Parboiled Rice Improvement project. The main highlights are on the profitability analysis for the various activities (i.e. Farming, processing and the APEX organisation), marketing options available, perceptions of the different stakeholders and lessons from the implementation strategy. The methodology included participatory appraisal techniques, a semi structured interview, group discussions and informal interactions were conducted among the different stakeholders participating in the programme. Estimates of financial profitability analysis of LRDP cropping and rice parboiling enterprise using Benefit Cost Ratio and Return on Revenue/Sales are presented in Tables 1-3. The profitability analysis yielded a break-even price (for 10bags per acre yield) of 157,000cedis per 83kg bag while that for 12 bags per acre was 131,000cedis per 83kg.

The profitability analysis for Processors considered four scenarios. These included purchasing paddy at 140,000cedis and 160,000cedis for both Tamale and Kumbugu situations. The results showed that at purchase price of 140,000cedis per bag of paddy and ex-factory price of parboiled milled rice at 4,444 cedis per kg, processors earn margin per man-day of 41,144 cedis and 43,644 cedis in Tamale and Kumbugu respectively. Generally, the project provided support to FBOs to strengthen their capability to be able to relate better with the bank improving on access to credit, organise production inputs and also improve on access to market. At the farmer level, the FSRPOP project sought to remove constraints especially lack of access to market in order to improve on the livelihood of farmers. At the processor level, the FSRPOP sought to provide technical assistance on best processing practices that would enhance rice quality. At the miller level, two mills were rehabilitated. They were supplied with shafts sieves, blades, bearings, belts and housing.

The capacity of the APEX body was built to serve the interest of farmers better.

- About 75% of the farmers were quite satisfied with its capability with regards to helping farmers to access credit facility, input and tractor services. Processors were particularly impressed about the provision of improved vessels and cement for the maintenance of their drying floors. At the end of the project some of the lessons learnt included; more timely delivery of inputs in subsequent similar projects and making processors more responsible and committed to ensure a quality control mechanism. In addition the APEX body should not be burdened with administrative issues that are beyond their capability. An inventory credit system should be put in place for stocks to be held for farmers to sell in the lean season to gain more attractive prices and possibilities should be explored to link farmers to medium scale buyers for more effective marketing arrangement

Economic Assessment of the Tamale Parboiled Rice Improvement Programme of the Food Security and Rice Producers Organisation Project (FSRPOP)

1.0 Introduction

The Lowland Rice Development Project (LRDP), funded mainly by the government of the Republic of France, was implemented in the Northern Region of Ghana in 1999 – 2003. It aimed at demonstrating the viability of rice production in the treated lowland of the Northern Region. The specific purpose of the project was to establish lowland rice production and processing methods, which are economically viable and sufficiently attractive for farmers and the women processors responsible for processing and commercialising this production.

The second component of the Food Security and Rice Producers Organization Project (FSRPOP), funded by the French Embassy (2002 – 2007) and hosted by MoFA, aims at sustaining the rice intensive cropping scheme developed by LRDP by building the capacities of farmer based organizations (FBOs) to fulfil some of the tasks ensured previously by LRDP, such as organize access to inputs and tractor services, monitor cropping activities, manage & sustain their collective structures (storage, water), access and manage credit, organize marketing of paddy. To achieve this general goal, the strategy taken is:

- To build strong FBOs at the community level, capable of executing the above-mentioned functions at community level;
- To build an apex body (named NILRIFACU¹) representing all FBOs at the regional level and able to
 - o Share information & build consensus between co-operatives so as to act as a mouth-piece for them and negotiate with main stakeholders (input suppliers, tractor owners, bank, rice brokers, processors, MoFA etc,) at regional level
 - o Facilitate collective access to main services (land preparation and inputs) and market
 - o Facilitate credit scheme procedures for the cooperatives and supervise credit repayment.

¹ Northern Region Intensive Lowland Rice Farmers' Cooperative Union

To alleviate the marketing problems faced in the North, FSRPOP implemented a Parboiled Rice Quality Improvement Programme in the northern region with the following objectives:

- *To produce on a pilot-basis in 4 selected communities located around Tamale, high quality parboiled and milled rice, using improved equipment and designing appropriate programmes of schedules (list of good practices) for Producers, and small-scale rice Processors, with close field supervision and technical support.*
- *Under an additional and adequate FSRPOP marketing support programme, the high quality parboiled and milled rice produced shall then be bought by the Union of Lowland Rice ' cooperatives in order to be bagged in 3-kg sachets, branded, advertised and displayed nationwide at a price equivalent to the Asian imported rice. Extra incomes generated by the sale of this rice shall be distributed equitably among the different stakeholders (Farmers, Parboilers and Millers) and therefore constitutes incentives to follow the designed programmes of schedules.*

This report presents an economic assessment of the FSRPOP project. The main highlights are as follows:

- Profitability analysis for the various activities i.e. Farming, processing and the APEX organisation
- Marketing options available
- Perceptions of the different stakeholders
- Lessons from the implementation strategy

2.0 Methodology

The methodology included participatory appraisal techniques, a semi structured interview (see Appendix 1 for a checklist or interview guide), group discussions and informal interactions conducted among the different stakeholders participating in the programme. The key stakeholders included 4 farmer groups selected from Sahakpaligu, Kumbungu, Kukuo and Gbalahi communities in Northern Region; 2 processor groups and millers from Tamale and Kumbungu and an APEX body with representatives from all farmer groups mandated to oversee the programme. A GAP analysis was employed. This sought to identify programme interventions, set targets gauged against achievements, and the variance noted.



Figure 1: Group discussions with farmer group at Gbalahi community in Northern Region

Interviews were conducted in August 2005. The assessment team also interacted with Prince Suleman Yakubu of Zangti-wuni Farmers Association (ZAFAMS) who was engaged by the Food Research Institute to carry out monitoring activities. A meeting was also held with the French Embassy representative stationed in Tamale and coordinating the second component of the FSRPOP project to gather information on programme expenditure and expected income.

3.0 Findings

3.1 Profitability Analysis

Estimates of financial profitability analysis of LRDP cropping and rice parboiling enterprise using Benefit Cost Ratio and Return on Revenue/Sales are presented in Tables 1-3.

3.1.1 Production

The analysis for 2005 cropping activity was compared to the forecast made in 2004. It is worth noting that the average yield used in the profitability analysis was the estimated total average yield per acre at the referenced community. It is also important to note that farmers received selling price of 140,000cedis per 83kg-bag when the market price at the time was 160,000cedis per 95kg-bag. Although farmers felt cheated by the APEX Body due to the difference in prices, they actually received fair prices if indeed the weight of the bag being sold on the market was 95kg. The analysis was done for different price ranges and yields.

Table 1: Profitability Analysis-Production

PER YEAR (1 ACRE CROPPED)

INCOME PER YEAR	2004	2005	2005	2005	2005	2005
Number of 83-kg paddy bags per acre	12	10	10	10	12	12
Selling price (cedis/paddy bag)	135,000	140,000	157,000	160,000	131,000	140,000
A=Revenue per acre	1,620,000	1,400,000	1,570,000	1,600,000	1,572,000	1,680,000
EXPENSES (per acre) part of credit						
Land preparation with tractor						
Ploughing	100,000	100,000	100,000	100,000	100,000	100,000
Harrowing	50,000	50,000	50,000	50,000	50,000	50,000
Fertilizer						
2 bags of NPK	370,000	334,000	334,000	334,000	334,000	334,000
0.5 bag of sulf. A	70,000	124,000	124,000	124,000	124,000	124,000
Sacks for water control (spill-ways, breaks)						
3 polysacks @ 4000 per bag @33% per annum	4,000	4,000	4,000	4,000	4,000	4,000
B=total expenses on credit	594,000	612,000	612,000	612,000	612,000	612,000
C=Cost credit (29% and 25% per annum for 2004 and 2005 loans respectively)	143,748	153,000	153,000	153,000	153,000	153,000
D= B+C= total debt	737,748	765,000	765,000	765,000	765,000	765,000
EXPENSES AND COST NOT PART OF CREDIT						
Bunding of fields						
Bunding cost = 500,000 per acre						
Depreciation at 25% per annum	125,000	125,000	125,000	125,000	125,000	125,000
Improved seed (TOX 3107)						
one 40kg bag/acre	110,000	110,000	110,000	110,000	110,000	110,000
Harvesting and threshing						
12 polyethylene sacks @ 3,300 cedis per bag	39,600	39,600	39,600	39,600	39,600	39,600
1 tarpaulin @ 135,000 cedis per bag, with depreciation @ 33% / annum	45,000	45,000	45,000	45,000	45,000	45,000
E=Total expenses and costs not part of credit including bunding	319,600	319,600	319,600	319,600	319,600	319,600
F=D+E=TOTAL COSTS AND EXPENSES excl cost of labour	1,057,348	1,084,600	1,084,600	1,084,600	1,084,600	1,084,600
G=A-F=Margin after deduction of all costs excluding labour	562,652	315,400	485,400	515,400	487,400	595,400
Cost of labour						
Number of Man-days/acre						
Land preparation	1	1	1	1	1	1
Planting in line	6	6	6	6	6	6
Weeding 1	6	6	6	6	6	6
Weeding 2	4	4	4	4	4	4
Localised application of fertilizer	5	5	5	5	5	5
Water management and bond maintenance	8	8	8	8	8	8
Harvesting	10	10	10	10	10	10
Threshing, winnowing and bagging	8	8	8	8	8	8
H= Total Man-Days/acre	48	48	48	48	48	48
I=Total cost of labour @10000cedis/Man-day	480,000	480,000	480,000	480,000	480,000	480,000
J=F+I = TOTAL COST OF PRODUCTION	1,537,348	1,564,600	1,564,600	1,564,600	1,564,600	1,564,600
K=G/H = MARGIN/MAN-DAY	11,722	6,571	10,113	10,738	10,154	12,404
L=A-J=NET INCOME	82,652	(164,600)	5,400	35,400	7,400	115,400
M=L/A x 100 = NET INCOME/REVENUE	5.10	(11.76)	0.34	2.21	0.47	6.87
Benefit: Cost Ratio	1.05	0.89	1.00	1.02	1.00	1.07

As indicated in Table 1, selling paddy at 140,000cedis per 83-kg bag in 2005 was not profitable because production cost far exceeded the revenue. Using the on-going market price of 160,000cedis (That was a 'shadow' price because in reality the weight of rice was 95 kg but not 83 kg) at the time of harvest for the profitability analysis generated net income of 35,400cedis per acre of rice farm, margin/man-day of approximately 11,000cedis which compared favourably with the market farming wage rate of 10,000cedis. The profitability analysis yielded a **break-even price (for 10bags per acre yield) of 157,000cedis per 83kg bag while that for 12 bags per acre was 131,000cedis per 83kg.**

3.1.2 Processing

The following were taken into consideration;

1. Processing capacity of 288 bags of paddy per year per processor; 1bag/batch/processor, 6 batches per week, 48 weeks per year (4weeks allowance for festivity breaks).
2. Recovery rate expected in 2004 was 62% but processors obtained 59% in 2005 (the actual obtained for 2005). There were suspicions of diversion of processed rice since the service charge payment arrangement used did not really encourage women to declare actual yields obtained (i.e. payment not proportional to recovery obtained).
3. No credit facility for Parboilers
4. A total of 288 man-days were involved in processing 288 bags of paddy (23,904 kg paddy) per year. However, the actual amount of paddy processed under the project was 318 bags or 26,394 kg
5. Straight-line method of depreciation was used.
6. No by-products sales were assumed.
7. No marketing charges (i.e. transportation to market, packaging, market toll and storage cost) were assumed. Therefore selling prices were considered to be ex-factory prices or wholesale prices.

The profitability analysis for Processors considered four scenarios including purchasing paddy at 140,000cedis and 160,000cedis for both Tamale and Kumbugu situations. The results showed that at purchase price of 140,000cedis per bag of paddy and ex-factory price of parboiled milled rice at 4,444 cedis per kg, processors earn margin per man-day of 41,144 cedis and 43,644 cedis in Tamale and Kumbugu respectively.

Table 2: Profitability Analysis-Processing

PER YEAR (288 Bags Processed; 6bags per week, 48weeks/year)

	2004	2005	2005	2005	2005
INCOME PER YEAR	Expected	Tamale	Kumbugu	Tamale	Kumbugu
Quantity of paddy processed per year(kg)	23,904	23,904	23,904	23,904	23,904
Number of 83-kg paddy bags processed per year	288	288	288	288	288
Quantity of & parboiled milled rice per year (kg) @62% and 59% recovery	14,820	14,103	14,103	14,103	14,103
Number of parboiled & milled rice per year (bowls)	5,489	5,223	5,223	5,223	5,223
Price of milled rice (Cedis/bowl, 1 bowl =2.7kg)	9,450	12,000	12,000	12,000	12,000
Price of parboiled and milled rice (Cedis/kg)	3,500	4,444	4,444	4,444	4,444
A = Income per year (23904kg paddy / 288bags processed)	51,871,680	62,681,600	62,681,600	62,681,600	62,681,600
EXPENSES					
Cost of 83-kg paddy bags					
Price of 83-kg paddy bag	135,000	140,000	140,000	160,000	160,000
Consumables					
Firewood (per 83-kg paddy bag)	3,780	9,800	9,800	9,800	9,800
Water (per 83-kg paddy bag)	2,000	3,000	2,100	3,000	2,100
Transportation					
Paddy rice (warehouse or selling point to processing site)	0	0	0	0	0
Parboiled paddy (processing site to milling site)	4,000	6,000	5,000	6,000	5,000
Milled rice (milling site to warehouse or selling point)	2,600	3,600	3,000	3,600	3,000
Milling					
Milling cost (per parboiled paddy bag)	12,500	12,500	12,500	12,500	12,500
Processing Equipment					
Depreciation per 83-kg paddy bag (Dep @ 25% per annum/total bags processed per year)	1,623	1,600	1,600	1,600	1,600
B=Total expenses per 83-kg paddy bay excl. cost of labour	161,503	176,500	174,000	196,500	194,000
C=Total Cost per year excl. cost of labour	46,512,864	50,832,000	50,112,000	56,592,000	55,872,000
D=A-C= Margin after deduction of all costs excl. cost of labour	5,358,816	11,849,600	12,569,600	6,089,600	6,809,600
Cost of labour (6 person process 6 bags/week)					
E= Total Man-Days per year	288	288	288	288	288
F= total cost of labour (@ 20,000 cedis /man-day)	5,760,000	5,760,000	5,760,000	5,760,000	5,760,000
G=C+ F = Total Cost of Production	52,272,864	56,592,000	55,872,000	62,352,000	61,632,000
H=D/E = Margin /man-day	18,607	41,144	43,644	21,144	23,644
I=A-G=Net Income / Year	(401,184)	6,089,600	6,809,600	329,600	1,049,600
J=I/A * 100 = Net Income/Revenue (%)	-1	10	11	1	2
Benefit: Cost ratio	0.99	1.11	1.12	1.01	1.02

At a purchased price of 160,000 cedis per 83-kg bag of paddy and maintaining the same ex-factory price of parboiled milled rice, processors earn margin per man-day of 21,144 cedis and 23,644 cedis in Tamale and Kumbugu respectively. The results therefore suggested that if the market price at the time of buying off from farmers was 160,000 cedis per 83-kg as farmers claimed, then paying processors labour fee of 20,000 per 83kg-bag of paddy was fair. However, if the true market price for 83kg-bag of paddy was 140,000 cedis then processors were paid less than their due (i.e. They should have been given labour fee of 41,144 cedis and 43,644 cedis in Tamale and Kumbugu respectively instead of 20,000 cedis per bag). However, if the processors had produced on custom mill basis, extra costs like marketing charges and interest on credit would have been incurred. It must be noted that increment in processing cost in 2005 well above the forecast made in 2004, before programme inception, reflected in similar hikes in selling price in 2005. Details on profitability analysis of rice processing in Tamale and Kumbugu are presented in Table 2.

3.1.3. APEX Body Activities

The profitability analysis for the APEX Body is presented in Table 3. It was realised that sorted and packaged milled rice cannot be sold below 16,286 cedis per 3kilos (The break-even price) on the Tamale market. Investigating the market situation revealed that selling sorted and packaged milled rice at the break-even price will be difficult, suggesting that to make reasonable gains on packaged milled rice in Tamale is unlikely. For the Accra market, the break-even price is 16,953cedis (approximately 17000cedis) per 3kilos packaged milled rice. The break-even prices for unpackaged milled rice (without sorting) are 13,307 cedis and 13,977 cedis per 3kilos for the Tamale and Accra markets respectively.

From the above analysis, making profit seemed unattainable. However if unpackaged milled rice were sold at 14,000 cedis per 3kilos then profit margin of 10,765 cedis on 83-kg bag paddy would have been realised. With these gains, it is proposed that farmers who seemed to be adversely affected should be adequately compensated. Farmers should be given 10,000 cedis per bag and the rest retained by the Apex Body to top up the revolving fund.

Table 3: Profitability Analysis-APEX Body

INCOME	Tamale	Tamale	Tamale(Sort)	Accra	Accra(Sort)
Quantity of paddy processed(kg)	26394	26394	26394	26394	26394
Number of 83-kg paddy bags processed	318	318	318	318	318
Quantity of parboiled milled rice (kg) @59% processing recovery and 90% Sorting recovery)	15572	15572	14015	15572	14015
number of bowls of milled rice	5768	5768	5191	5768	5191
Price of milled rice (Cedis/3-kilo)	13,307	14,000	16,286	13,997	16,953
Price of milled rice (Cedis/kg)	4,436	4,667	5,429	4,666	5,651
A = Income (26394 kg paddy / 318 bags processed)	69,076,110	72,671,480	76,083,691	72,657,776	79,198,176
EXPENSES					
Paddy 318 @ 140,000/83-bag	44520000	44520000	44520000	44520000	44520000
Parboiling charges	16,888,000	16,888,000	16,888,000	16,888,000	16,888,000
Sorting & packaging @ c1500/3-kilo sachet	0	0	7007607	0	7007607
Transport to sales point@c7000 and 30,000cedis/100-kilos	1,090,072	1,090,072	1,090,072	4,671,738	4,204,564
Fuel to transport FRI Officer	238,000	238,000	238,000	238,000	238,000
T&T for Apex EC for paddy purchase	1,120,000	1,120,000	1,120,000	1,120,000	1,120,000
Transport of paddy to Tamale SIU	1,244,000	1,244,000	1,244,000	1,244,000	1,244,000
Purchase of goods	3,332,000	3,332,000	3,332,000	3,332,000	3,332,000
Winnowing and bagging 267 bags + Fibre	644,000	644,000	644,000	644000	644000
Sub-Total	69,076,072	69,076,072	76,083,679	72,657,738	79,198,171
Contingency (Unforeseen Cost)	-	-	-	-	-
TOTAL	69,076,072	69,076,072	76,083,679	72,657,738	79,198,171
NET INCOME	38	3,595,408	12	38	4
Net Income/83-bag	0	10,765	0	0	0

3.2 Intervention Strategies and GAP Analysis

As indicated in the methodology, the GAP analysis identifies programme interventions, set targets gauged against achievements, and the variance noted. Generally, the project provided support to FBOs to strengthen their capability to be able to relate better with the bank improving on access to credit, organise production inputs and also improve on access to market.

1. Farmers

At the farmer level, the FSRPOP programme sought to remove constraints especially lack of access to market in order to improve on the livelihood of farmers. It was expected that about 70 tonnes of paddy from farmer fields would be purchased for quality improvement

processing activity. The FSRPOP instituted a system to encourage quality (contract and incentive). The primary objective of providing ready market for farmers produce was achieved. However, some farmers refused to sell to the APEX; only a third of volume of paddy expected was sold. Apparently market conditions at the time of harvest were better than the previous year. As explained before, market price for paddy was 160,000 cedis per 95kg –bag as compared to 140,000cedis per 83kg-bag offered by APEX. Generally farmers did not consider the weight of paddy per bag but rather ‘bag’ as the unit of measurement. Table 4 gives a summary of proposed interventions, achievements and deviations at the farmer level.

Table4: Summary of interventions, achievements and deviations at the farmer level.

<p>CONSTRAINTS</p> <ul style="list-style-type: none"> • Poor farming practices • Late land preparation due to lack of capital • High cost of production inputs such as seed and fertilizer • Lack of access to market, transportation difficulties and unattractive selling prices especially at harvest • No quality channel: no real incentive to produce high quality rice 	<p>PROPOSED INTERVENTIONS</p> <ul style="list-style-type: none"> • Technical assistance on best rice farming practices (to improve quality and yields) to about 70 farmers cultivating an average of acre each • Timely land preparation on credit • Timely supply of production inputs on credit • Ready market arrangement for paddy • Expected about 70 tonnes of paddy from farmers for quality improvement processing activity
<p>ACHIEVEMENTS</p> <ul style="list-style-type: none"> • Technical assistance on best rice farming practices provided • Input supply on credit (Agrochemical & improved seeds and fertilizers) provided • Ready market arrangement for all farmers 	<p>DEVIATIONS</p> <ul style="list-style-type: none"> • Late programme start off • Low quality and low yields obtained in some areas due to external factors like irregular rainfall pattern, unlevelled field and its attendant problems with water management • Some farmers refused to sell paddy to APEX; only a third of expected volume obtained due to relatively low shadow prices

2. Processor

At the processor level, the FSRPOP sought to provide technical assistance on best processing practices that would enhance rice quality. Two groups of processors from Tamale and Kumbugu benefited. The processors were given paddy rice for processing on service charge basis. Total service charge per 83-kg paddy bag was 54,000 cedis and 56,500 cedis for Kumbugu and Tamale processors respectively (breakdown detailed in the profitability analysis for processors). Table 5 shows summary of interventions, achievements and deviations at the processor level.

Table5: Summary of interventions, achievements and deviations at the APEX level.

<p>CONSTRAINTS</p> <ul style="list-style-type: none"> • Inadequate access to quality raw material • Inefficiencies in processing techniques • Poor condition of drying areas • Inadequate access to urban market and low demand for local rice 	<p>PROPOSED INTERVENTIONS</p> <ul style="list-style-type: none"> • Access to quality raw material • Provision of technical assistance on best processing practices • Provision of improved vessels which reduce fuel and water use and labour costs • Provision of cement for repair and maintenance of drying floors. • Payment for processing services
<p>ACHIEVEMENTS</p> <ul style="list-style-type: none"> • Technical assistance on best rice processing practices and improved processing vessels were provided • Cement was provided for maintenance of drying floors • There was improvement in processing capacities without credit. The programme provided additional work and revenue to processors 	<p>DEVIATIONS</p> <ul style="list-style-type: none"> • Processors had access to raw material of relatively low quality • Level of quality of parboiled rice lower than expected • Recovery rate of parboiled rice lower than expected (59% obtained instead of 62% expected).

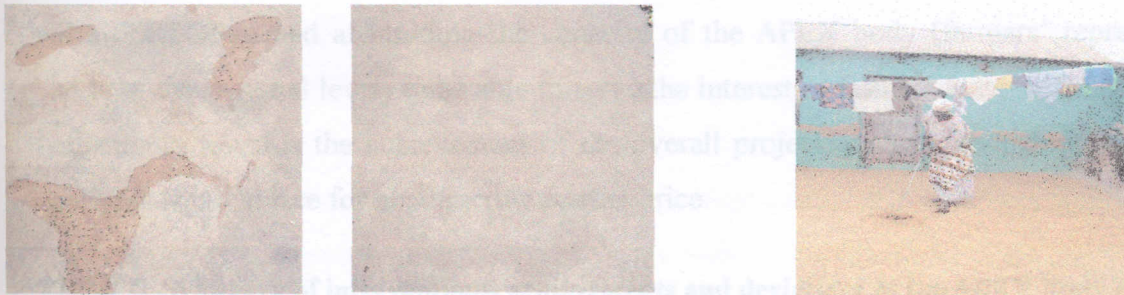


Figure 2: Before (with a lot of pot holes) and after (Smooth) conditions of drying floors

The improved vessel has a higher capacity, can be used to parboil one 83-kg bag of paddy at time as compared to a third for the traditional pot. Savings are made on fuel, water and labour with the improved vessel. A total of 10 women processors benefited

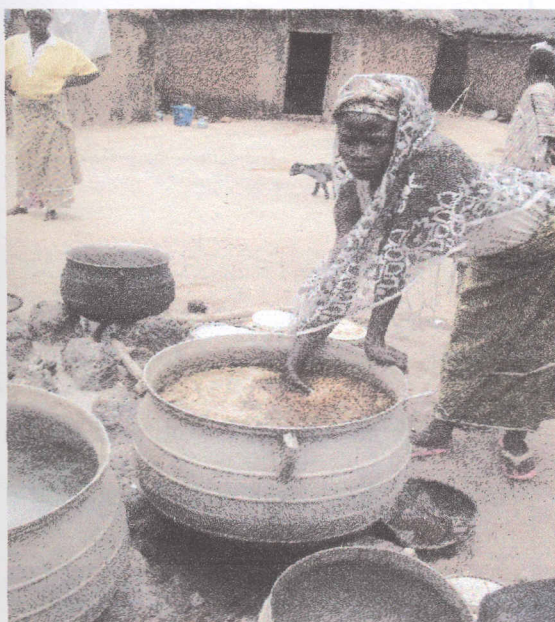


Figure 3 Traditional (Before) pot and Improved Vessel (After)

3. Millers

At the miller level, two mills were rehabilitated. They were supplied with shafts sieves, blades, bearings, belts and housing. The project estimated milling charge of 12,500 cedis per 83-kg parboiled paddy bag (paddy passed twice through mill) instead of existing milling charge of 10,000 cedis (paddy passed once through mill). This was actually paid as expected.

4. The APEX Body

The FSRPOP aimed at building the capacity of the APEX body (farmers' representative body at the regional level) to be able to serve the interest of farmers better and also to work effectively towards the achievement of the overall project goal of producing high quality parboiled-milled rice for an attractive market price.

Table 6: Summary of interventions, achievements and deviations at the APEX Body level.

<p>CONSTRAINTS Weak farmer based organization which was unable to negotiate with main stakeholders at the regional level</p>	<p>PROPOSED INTERVENTION Build the capacity of APEX to fulfill the following functions</p> <ul style="list-style-type: none"> • Share information and build consensus between cooperatives • Organize access to inputs and tractor services • Monitor cropping activities • Manage and sustain their collective structures such as storage and water structures • Access and manage credit • Access quality sensitive market
<p>ACHIEVEMENTS</p> <ul style="list-style-type: none"> • Input and services arrangement was fairly good. • Able to access and managed credit 	<p>DEVIATIONS</p> <ul style="list-style-type: none"> • APEX body was not strong enough to perform administrative issues. Literacy level not adequate. • Difficulty in enforcing contractual agreement with farmers • Weak information sharing on the marketing arrangements for parboiled and milled rice

3.3 Perceptions

3.3.1 Farmers' perception on project

Assessing the activities of the APEX body, about 75% of the farmers visited in the project areas were quite satisfied with its capability with regards to helping farmers to access credit facility, input and tractor services. Individual farmers could not have had that opportunity. The rest (25%) complained about delays on the part of the APEX body in assisting farmers to access inputs and tractor services.

In relation to the marketing arrangements, half of the farmers did not have confidence in the capacity of the APEX body. Although majority of the farmers understood that whatever profit accruing from the quality improvement program was to be shared among stakeholders, they felt the offer price for paddy at harvest was not attractive. Generally, farmers would want to store produce and sell when there are urgent needs for cash. This notwithstanding farmers were willing to honour their contractual obligations if price offer was attractive. Farmers also complained about lack of communication on update of the efforts being made by APEX to access urban market for parboiled and milled rice at the time of the survey.

Sahakpaligu

In the Sahakpaligu area, all the farmers (100%) who participated in the project were happy with the APEX activities with respect to credit and input arrangements. Access to credit facilitated their planting activities more easily. The farmers also indicated that access to land preparation services as well as farming inputs especially fertilizer contributed immensely to the relatively high yields achieved. The average yield/acre obtained by these farmers was 10bags (a bag is 83-kg paddy); minimum and maximum of 6bags and 18 bags respectively.

Perception of this group on the marketing arrangements by the APEX body was fairly good. Although the buying price of paddy at 140,000cedis per 83-kg bag offered by the Apex body was wrongly perceived to be a little lower than the average market price of 160,000cedis per 95kg-bag of paddy the farmers sold off most of the paddy rice they had harvested to the Apex body. This is because they believed in the sustainability of the project as well as the terms of agreement of the project. Selling off the paddy to the Apex body made credit repayment easier. Extra sales made after deductions were perceived as profit since family labour was used. They also took into consideration the fact that transportation cost of conveying the paddy to the market was eliminated therefore making up for the difference in market price of the paddy compared to the price offered by the Apex body.

Kumbungu

In this area the average yield per acre of paddy rice harvested was approximately 10bags/acre. Farmers in this area also perceived the project as being beneficial to them especially in terms of building the capacity of APEX to help farmers



access credit, inputs and tractor services. All the farmers in this area were contented because hitherto most of them could not afford to purchase basic farm inputs such as fertilizer for increased yield of their produce. They also expressed satisfaction at the training programmes they received under the project. Most of the farmers stated that training on the method of application of fertilizer was

most beneficial to them since some of them lacked that requisite knowledge. On the whole this group was the most appreciative of the project and they expressed their willingness in sustaining its activities as such they were known to be the group that sold off its entire rice paddy harvested to the Apex body. They had confidence in the marketing arrangement.

Kukuo

Farmers in this area indicated that though the project design was good and laudable in terms of building the capacity of the APEX body to assist farmers access credit, inputs and services for farming, poor climatic conditions coupled with unlevelled fields prevented them from obtaining the full benefits of the project. Poor rainfall observed in this area during the planting period of the paddy rice was translated into low yields of approximately 7bags/acre of paddy on the average. The



lowest yield in this area was 3bags/acre and the highest was 11bags/acre under the project. The farmers indicated that though yields gained under the project were low due to poor climatic conditions it was nonetheless superior to yield per acre for non-participating farmers. They were however not too happy with the marketing arrangements.

Gbalahi

Farmers who participated in the programme in this area complained of some problems that did not make them realize the benefits of the project. They alleged that the credit, input and tractor service arrangements came a bit too late into the farming season. Hence the late

cropping of the paddy rice resulted in low yields/acre of approximately 6.5bags/acre. They maintained that normally yields could be as high as 18bags/acre.

Farmers in this area were not happy with the marketing arrangements offered by the APEX body. They indicated that the buying price of 140,000cedis per -bag of paddy proposed by the Apex body was on the low side compared to the existing market value of 160,000cedis per -bag and therefore refused to sell any of the harvested paddy to the APEX body

3.3.2 Perceptions of the Processors

All the two-processor groups interacted with gave positive outlook of the programme. Though initially unhappy about the service fee due to relatively high cost of fuel, they were satisfied with upward adjustment of service fee from the proposed 46,500 cedis per bag including milling charges to between 54,000 and 56,500 cedis. Proposed margin/man-day or labour cost of 20,000 cedis per 83kg-bag was maintained. Processors were particularly impressed about the provision of improved vessels and cement for the maintenance of their drying floors as already indicated. They however attributed relatively low quality of parboiled and milled rice to poor quality of paddy.



3.3.3 Perceptions of the APEX Body

Evaluating their performance, they were quick to point out that the input supply arrangement was good. They were able to help farmers to obtain inputs at relatively low prices. Loan transactions with the financial institutions were not smooth because a lot of time was spent on due diligence making sure only credit-worthy farmers participated in the programme. Again there were difficulties with paddy purchases since some farmers refused to sell or just sold enough to defray



loan commitments. Only a third of expected volume of paddy was purchased. The APEX Body members admitted that their organisation is still young. Administratively, it will take some time and a lot of education for them to become a strong organisation. At the time of interview, the APEX Body members were still not clear about the fate of parboiled and milled rice in stock while other stakeholders kept pestering them on profit sharing schemes when the milled rice is finally sold.

Generally, the APEX Body members were satisfied with rate of recovery obtained by processors. They claimed losses were more production related; due to immature and unfilled grains. This was caused by poor rains. Again some tarpaulins used for threshing were in pretty bad conditions. They perceived the project to be laudable however there were delays in credit release and field monitoring was not very effective due to lack of means of transport. At the processing level, the quality improvement was below expectation. They claimed some of the rice had stones and black spots which might have been the result of poor quality paddy used.

They expressed their willingness to continue the programme but possibly with some modifications. From experience, they proposed limiting the programme to the farmer level. This means that the APEX will assist farmers to access credit for input supplies that is deductible at harvest; farmers just selling off enough to defray loan commitments to processors.

3.4 Gender Issues

Women participation in the programme was rather low. Less than 10% of the farmers were females. This actually reflects representation of women in rice cropping. However all the 10 processors participating were females since rice processing is exclusively female activity



Figure 4: Some female farmers interviewed at Gbalahi community

4.0 Conclusions

4.1 What went wrong?

- Most stakeholders were not honest; some farmers did not declare their yields correctly and one group in Gbalahi failed to sell paddy to APEX body.
- Processors had less recovery rates than expected; 59% instead of 62%
- APEX body was too weak in performing more complex administrative issues. Consequently, administrative arrangements required more efforts than expected
- Parboiled rice quality: Quality of processed rice was below expectation and efforts are needed to demonstrate that it is possible to obtain very high quality rice in the LRDP areas. This inadequate quality could be due to irregular rainfall pattern, unlevelled fields and inappropriate water control

4.2 Lessons learnt

- Input arrangement should be more timely to avoid unnecessary delays
- To make processors more responsible and committed, there should be a credit purchase arrangement for them to do custom based processing; processors use their own purchased paddy for processing and sell off to the APEX body after processing. This will also serve as a quality control mechanism.
- The APEX body should not be burdened with administrative issues that are beyond their capability.
- An inventory credit system should be put in place for stocks to be held for farmers to sell in the lean season to gain more attractive prices.
- It does not seem attractive to request of farmers to sell all their harvest at once. They need to put aside some as a saving habit and to wait for the price to appreciate (getting all the cash at once is the best way to misuse it as there does not seem to be many secured way to keep money)
- Explore the possibility of linking farmers to medium scale buyers for more effective marketing arrangement

Table 7: Summary of Economic Assessment

Stakeholders	Situational Analysis in 2004	Situational Analysis in 2005
Farmers	<p>Using the average selling price of 135,000 cedis per 83-kg paddy Margin /Man-day was estimated at approx. 11,700 cedis</p> <p>Net income per acre of 82,900</p> <p>% of Net income/Revenue of 5%</p> <p>Benefit Cost Ratio of 1.05</p>	<p>Paddy was purchased by APEX at 140,000 cedis per 83-kg bag. This generated negative net income of 164,600 cedis per acre. However using the 'shadow' on-going market price of 160,000 cedis (per bag of 95kg) at the time of harvest for the profitability analysis generated net income of 35,400 cedis per acre of rice farm, Net income/Revenue of 2% and Benefit Cost Ratio of 1.02. The Margin/man-day of approximately 11,000 cedis was obtained which compared favourably with the market wage rate of 10,000 cedis. From the profitability analysis the break-even price was 157,000cedis per 83-kg bag and 131,000 cedis per 83-kg bag for average yields of 10 bags and 12 bags per acre of rice farm respectively.</p>
Parboilers	<p>Using the average selling price of 3,500cedis/kg of milled parboiled rice, Margin/Man-day was estimated at approx. 20,000cedis. Net income per year of 2,622,740 cedis, % of Net income/Revenue of 5% and Benefit Cost Ratio of 1.05.</p>	<p>Actual selling price in 2005 was higher. Using selling price of 4,444 cedis/kg (12,000 cedis per bowl of 2.7kg) with paddy bought at 160,000 cedis, Margin/manday of approximately 21,000 and 24,000 cedis are estimated for Tamale and Kumbungu processors respectively. Net annual income was approximately 400,000 cedis for Tamale processors and 1,000,000 cedis for Kumbungu processors. Return on revenue or sales of 1% and 2% for Tamale and Kumbungu processors respectively and Benefit Cost Ratio of 1.01 and 1.02 in similar order. Thus the profitability analysis results compared favorably with the real case situation under the project in 2005 where women processors were contracted to process raw paddy using the proposed improved technology (with no cleaning and sorting option after processing) for a fee of 20,000 cedis per 83-kg bag.</p>
Millers	<p>Milling Charge of 12,500 cedis per 83-kg parboiled paddy bag (for milling twice at a time).</p>	<p>Milling Charge of 12,500 cedis per 83-kg parboiled paddy bag was paid for milling (passing paddy twice through mill). Millers also had access to spare parts.</p>
Apex Body	<p>An average selling price of 135,000 cedis per 83-kg paddy and a parboiling charge (including milling) of 46,000 cedis per processor were proposed. The Apex body anticipated</p>	<p>Using average selling price of 140,000 cedis per 83-kg paddy and parboiling charges of 54,000 and 56,500 cedis per bag for Kumbungu and Tamale processors respectively, the Apex body incurred a total production cost of 217,220 cedis per 83-kg paddy bag processed. Four main marketing options are available. These include the following:</p> <ol style="list-style-type: none"> 1. Selling milled unpackaged (without sorting) rice at break-

a total production cost of approx. 181,000cedis per 83-kg paddy bag processed and average recovery rate of 62%. This resulted in cost of 3,550 cedis per Kilo of milled parboiled rice.

- even price of 13,307cedis per 3kilos in Tamale
- 2. Selling milled and packaged (sorted) rice at break-even price of 13,977 cedis per 3kilos in Tamale
- 3. Selling milled unpackaged (without sorting) rice at break-even price of 16,286 cedis per 3kilos in Accra
- 4. Selling milled and packaged (sorted) rice at break-even price of 16,953 cedis per 3kilos in Accra.

Studying the market situation, making profit is unlikely. However, if the market situation should change and unpackaged rice is able to sell at 14,000 cedis per 3kilos then profit margin on 83-kg bag paddy will be 10,765 cedis. It is proposed that if this gain is realized then farmers who seemed to be adversely affected should be adequately compensated with 10,000 cedis per bag and the rest retained by the Apex body to top up the revolving fund.

CHECKLIST FOR ECONOMIC ASSESSMENT SURVEY

Objective

To gather data and information required to fine-tune profit-sharing system among stakeholders. Specifically, data and information should address the following;

1. Establish existing and new cost structures / level of investment for farmers, parboilers and millers
2. Establish yields / recovery rates in kilos per unit at farmer, parboiler and miller' levels
3. Establish expected output with improvement and any other change in terms of labour, energy requirement and quality of products
4. Establish existing pricing systems used by (Indicating mark-ups and how final prices are determined) farmers, parboilers and millers

NB. Sampling should be representative; reflecting the size of participants in each target community.

Interview process; individuals and groups (farmers, parboilers and millers)

Other sources of information; Input suppliers, Technical Experts FRI & FSRPOP,

FARMERS

Rice Production Cost / acre

Land acquisition

Land Preparation

Planting material

Labour

- Planting
- Weeding
- Fertilizer application if any
- Application of other Agro-chemical
- Harvesting
- Drying
- Bagging
- Carting

Fixed Inputs (Cost per unit; indicate number of units and Useful life)

- Farm tools
- Thresher / Threshing boxes
- Power Tiller

Revenue

- Yield per acre (Paddy)
- On-going selling prices of paddy (Kg)

PARBOILERS

- Cost of Paddy (units processed per batch specified)
- Transportation if any
- Labour
- Milling
- Fuel

- Water

Fixed Inputs (Cost per unit; indicate number of units and Useful life)

Existing

- Aluminium pots
- Clay pots
- Buckets
- Stirring wood
- Calabash
- Basin
- Basket
- Koko bowl
- Sieve
- Polypropylene sheets

Cost of new inputs

- Cemented flour
- Improved Vessels

Revenue

- Yield/bag of paddy with and without improvement
- Current selling price/unit (Kg)
- Recovery rate (during parboiling and milling)

MILLERS

Cost (Cost per unit; indicate number of units and Useful life)

Existing milling machine

- Energy Requirement
- Labour Requirement

New Equipment for Millers (Cost per unit; indicate number of units and Useful life)

- Aspirators
- New Sieves for existing Engelberg Mills
- Destoners

Cost of other Market Facilitating Function

- Packaging
- Storage
- Transportation
- Other handling Charges

Revenue

Milling charges and how they are determined