Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalising the Rural Economy in the Federal Republic of Nigeria

TECHINICAL ANNEX FOR THE FINAL REPORT

PILOT PROJECT REPORT

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Abbreviations and acronyms

ADP	Agricultural Development Programme
ASBI	American Shea Butter Institute
BDS	Business Development Service
BDSP	Business Development Service Provider
BIC	Business Information Centre
BOI	Bank of Industry
BSC	Business Support Centre
CSF	Critical Success Factor
CEFE	Competency-based Economies through the Formation of Entrepreneurs
EoPSD	Employment-oriented Private Sector Development Programme
FFA	Free Fatty Acid
FMST	Federal Ministry of Science and Technology
FUT	Federal University of Technology
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GTZ	Deutsche Gesellschaft für technische Zusammenarbeit
IFAD	International Fund for Agricultural Development
IITA	International Institute of Tropical Agriculture
KGI	Key Goal Indicator
KMCICT	Kano State Ministry of Commerce, Industry, Cooperatives and Tourism
KNARDA	Kano State Agriculture and Rural Development Authority
KPI	Key Performance Index
LGA	Local Government Areas
MFST	Ministry of Science and Technology
MSMEs	Micro, small, and medium enterprises
NACCIMA	Niger Chamber of Commerce, Industry, Mines, and Agriculture
NAFDAC	National Agency for Food and Drug Administration and Control
NARICT	National Research Institute For Chemical Technology
NASSI	Nigeria Agency for Small Scale Industrialists
NCRI	National Cereals Research Institute
NEPC	Nigeria Export Promotion Council
NERFund	Nigeria Economic Reconstruction Fund
NGOs	Non Governmental Organizations
NIFOR	Nigeria Institute for Oil Palm Research
NISPA	Niger State Shea Products Association
NRCRDB	Nigeria Agricultural Co-operative and Rural Development Bank Limited
NSADP	Niger State Agricultural Development Project
NSCEPA	Niger State Commodity and Export Promotion Agency
NSMCI	Niger State Ministry of Investment, Commerce and Cooperatives
OIC	Opportunities Industrialization Centre
OLOP	One Local Government One Product
PDCA	Plan, Do, Check, and Action
REMASAB	Refuse Management and Sanitation Board of Kano State
RMRDC	Raw Materials Research and Development Council

SMEDAN	Small and Medium Enterprises Development Agency of Nigeria
SMEs/MF Agency	Small and Medium Enterprises and Micro Finance Agency
SON	Standard Organization of Nigeria
SWOT	Strengths, Weaknesses, Opportunities and Threats
TIC	Technology Incubation Centre
UNIDO	United Nations Industrial Development Organization
WAYS	Women and Youth Support (NGO)
WHO	World Health Organization
WOFAN	Women Farmers Advancement Network

Executive summary

1. Background of pilot project implementation

The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) developed a concept paper of the One Local Government One Product Programme (OLOP) in April 2009 to revitalize the rural economy, improve employment opportunities, and alleviate poverty in rural areas in Nigeria. This was based on the One Village One Product (OVOP) movement implemented in Oita Prefecture in Japan. The governments of both Nigeria and Japan agreed to implement a technical cooperation programme (Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalizing the Rural Economy in the Federal Republic of Nigeria) beginning in February 2010 to verify implementation methods and institutional arrangements for the promotion of OLOP. The project was implemented by a Technical Cooperation Team.

The Technical Cooperation Team reviewed the OLOP Concept Paper in terms of the following four aspects:

1. Relevance of the basic concept of OLOP to the concerned policies,
2. Feasibility of the proposed institutional framework,
3. MSMEs' demand for provision of business development service (BDS), and
4. Effectiveness of the proposed approach of the OLOP.

To review and verify the above four aspects of the OLOP Concept Paper, pilot projects were conducted in Kano and Niger States from September 2010 to July 2011. In the course of the pilot project implementation, baseline and value-chain surveys and analyses were carried out and BDSs were delivered to approximately 50 selected enterprises that manufactured six products.

In each state, two national staff members of the Technical Cooperation Team were hired to implement the delivery of BDSs. The experts on the team conducted baseline and value-chain surveys and analyses, business diagnoses and consultations, technical development, marketing, facilitation of bank loans, monitoring and evaluation of the pilot projects, and capacity development of the national staff members. The pilot projects demonstrated that the work of the national staff members and experts could be undertaken by government agencies.

The number of MSMEs dealing with the selected products and the size of business in both Kano and Niger States were estimated in order to find out the scale of public investment that would be needed to implement the Action Plan effectively. The market structures and behaviours of the selected products were analysed to identify issues, possible solutions, and necessary public resources needed to deliver appropriate BDSs. Types of BDSs and the timing of their delivery were also examined to find out if higher value-added products could be made available.

In the following chapters, results of the pilot project implementation are reported.

2. Selection of products for the pilot project

Workshops were held in Kano and Niger States with government officials to decide on target products for the pilot project. Given the results of the workshops, the Technical Cooperation Team, together with SMEDAN and state governments, selected rice, leather, and groundnut oil for Kano State and shea products, groundnut oil, and yams for Niger State as target products for the pilot project, including baseline surveys and value-chain analysis.

3. Implementation and results of baseline surveys

Baseline surveys were conducted as part of the pilot project in Kano and Niger States. These examined strategies of BDS provision, as well as baseline information, in order to allow changes caused by BDS provision to be measured. The survey population consisted of 1,404 enterprises from 21 business types in selected product value chains. The baseline surveys targeted 320 enterprises as samples to estimate various parameters of the population. Information collected included characteristics of enterprises, labour force, management methods, needs and supply of BDS, finance, profit and loss, assets and liabilities, and perception about market characteristics and trends.

The baseline surveys revealed that a great many MSMEs were involved in the value chains, and that some products had large economies of scale in the state. It was thus important to select appropriate business types in value chains as targets of BDS provision. The baseline surveys also found that around 80% of the enterprises belonged to the informal sector, and that the quality of labour was unsatisfactory. These factors were bottlenecks that prevented the enterprises from expanding their operations. It was confirmed that enterprises with these bottlenecks were in great need of BDS and finance, whereas the supply of BDS and finance failed to meet that demand. Management resources, such as assets and human resources, of MSMEs were found to be limited, as were their clients. These findings confirmed that government assistance is needed to promote MSMEs, which have tended to lose profits because of inflation in recent years.

4. Value-chain analysis and results

The following section summarizes the current situation of BDS for each target product, as well as the characteristics and issues of clusters in value chains in each state. Issues faced by major business types were as follows.

Kano State

Kura rice cluster: Kano State is a major rice-distribution centre in Nigeria, and the largest number of enterprises are located in Kura. These include parboilers, rice millers, and rice traders. Value-chain analysis was conducted on these business types. Although the profit margins of these business types may increase if they expand their operations into other business types (vertical integration), few enterprises practice vertical integration. Another issue is the quality of the rice. Kura has a reputation for having poorer rice than other areas. Technical improvement in the process from parboiling through milling is necessary. Use of new milling machines and marketing of improved rice are especially pressing needs.

Leather industry: Value-chain analysis was conducted on leather traders, traditional tanneries, and leather producers. The major issues were not knowing how to improve quality (because there is no effective distribution system that could reflect quality standards and demand trends) and inappropriate techniques used in tanning and manufacturing.

Groundnut oil: Value-chain analysis was conducted on groundnut traders, traditional groundnut-oil processors, mechanical groundnut-oil processors, and groundnut-oil traders. For traditional groundnut-oil processors, processing is inefficient and requires heavy labour, but they lack the finances needed to adopt improved technology. Although Kano State has a large potential demand for groundnuts and groundnut oil, old business practices, such as delay or failure in payment, must be overcome. Mechanical processors have not been able to make full use of processing machines for various reasons, including the escalating price of raw materials and power failure. They also face price competition from imported vegetable oil, which makes management more difficult.

Niger State

Shea products: Value-chain analysis was conducted on traditional shea-nut processors, traditional shea-butter processors, mechanical shea-butter processors, and shea-product traders. The state government, with support from donor agencies, provides technical assistance to help processors improve their quality. However, the enterprises use such different methods of processing that they cannot supply the quality and quantity of shea products demanded by the market. Shea-butter processors have limited access to markets, and they deal with traders individually. As a result, shea-butter processors lack the power to bargain over prices and, therefore, to improve their quality. That the traditional shea-butter market does not recognize quality standards such as Free Fatty Acid (FFA) is another obstacle.

Groundnut oil: Value-chain analysis was conducted on groundnut traders, traditional groundnut-oil processors, mechanical groundnut-oil processors, and groundnut-oil traders. Traditional groundnut-oil processors outsource part of the processing. They could internalise all of the processing by purchasing machines, but they cannot often get loans from financial institutions. Mechanical processors cannot secure raw materials during the year and sometimes have to close their factories temporarily.

Yams: Value-chain analysis was conducted on yam traders, yam-flower traders, and yam wholesalers. Storage of yams is an issue, because losses caused by surface damage, high moisture content, and germination cause a decline in prices. Niger State is the largest producer of yams in the world. Yams traded in the Paiko market are transported to large consumption areas, such as Lagos and Abuja. Yams have significant potential for export, and Nasarawa State already exports yams. However, Niger State receives buying agents only from Niger.

5. Results of pilot project implementation in Kano State

Rice

Kura rice parboiler project: Parboilers received bookkeeping training. Their literacy level was low. They could keep books with assistance from volunteers, but they could not read their books. Unfortunately, they did not attempt to continue keeping books. The Technical Cooperation Team also monitored their effort to save money in order to become paddy traders. Parboilers, however, lost interest in the pilot project when they discontinued bookkeeping. The pilot project provided parboilers with BDS to improve their management capacity, while other donors approached them with financial assistance to cover operational costs. This difference in approach might have discouraged parboilers from continuing to participate in the pilot project.

Kura rice miller project: Rice processed in Kura has a reputation for low quality. The project aimed to improve the quality of rice by introducing new rice-milling machines. Rice millers learned bookkeeping. They also applied for a loan programme with assistance from the Technical Cooperation Team and went to interviews with the bank. However, by the end of the pilot project period, they did not receive the loans. Organizations that attempt to provide loans to small-scale enterprises need to clarify loan conditions and shorten the loan-appraisal period. Improvement of BDS in finance is indispensable.

Leather

Kano traditional tannery project: The pilot project introduced 5S to enable the Association of Traditional Tanneries to manage sanitation better, and cleaned the tanning facilities in coordination with government agencies, including the Ministry of Environment. The Technical Cooperation Team monitored the tannery weekly with a checklist on sanitary requirements, but the motivation of the Association did not improve. It was therefore agreed among stakeholders, including the Kano State

Ministry of Environment, the Kano State Ministry of Commerce and Industry, and Kano City, that a sanitation officer of Kano City would supervise management of the tanning facilities. The Technical Cooperation Team trained the Association on bookkeeping. However, receipts and expenditures of association fees did not show on the books clearly, and bookkeeping was discontinued during the pilot project period. Another outcome of the pilot project was that the Technical Cooperation Team enabled a leather trader to resume trading with the Association after a long hiatus.

Kano leather-products manufacturer project: The Technical Cooperation Team provided leather-product manufactures with bookkeeping training to improve their financial management skills. This training helped leather producers understand the breakdown of product cost and cost percentage and thus become more cost conscious. An accounting system was introduced to consider a product mix made up of products with higher profit margins, but the accounting data did not generate marketing strategies. It seemed to be too difficult for bookkeeping beginners to deal with multiple books. As a new marketing strategy, the National Export Promotion Council (NEPC) suggested that leather-product manufacturers should display their products at international trade fairs in neighbouring countries, and the leather-product manufacturers did prepare pamphlets about their products.

Groundnut oil

Dawakin Tofa groundnut-oil traditional processor project: Production of groundnut oil has increased because of the labour-saving and efficient manual oil-extraction device introduced by the Technical Cooperation Team. The oil processors registered themselves as a cooperative with the Kano State Ministry of Commerce and Industry, and received training on group purchase of raw materials. Unfortunately, reduction in raw material cost by group purchase did not reach the target of 20%. Social and religious factors may have hindered the oil processors from exploring new markets and building new styles of business. BDS on bookkeeping was provided, but the oil processors could not keep books without assistance.

Kano groundnut-oil mechanical processor project: The Technical Cooperation Team provided 5S training to the mechanical processors in order to improve the work environment in their factories. Weekly monitoring was conducted using a checklist. In order to sell groundnut oil in labelled bottles to be sold at supermarkets, oil processors must register at the National Agency for Food and Drug Administration and Control (NAFDAC), and invest in production facilities, such as sanitation management, oil filtering, and equipment to add vitamin A to processed oil, in order to meet NAFDAC requirements. 5S was introduced as a low-cost measure to improve the working environment. During the pilot project, some oil processors temporarily stopped operation because of the elevated cost of raw materials. On the other hand, one oil processor eagerly implemented 5S to organize his workplace. This processor planned to introduce oil filters into his factory, but that had not been achieved during the pilot project period.

6. Results of pilot project implementation in Niger State

Shea products

Kacha shea-butter traditional processor project: The Technical Cooperation Team carefully studied the shea-butter production process in order to propose production methods suitable for the local environment that could improve shea-butter quality. Of the factors that influence shea-butter quality, such as moisture content, Free Fatty Acid (FFA), and impurities, the Technical Cooperation Team used FFA to classify the grades of shea butter. The Technical Cooperation Team also developed a simple test kit to check FFA and tested it as a quality-control tool in the field. A workshop was held in Kacha to present the shea-butter processing method proposed by the pilot project to large-scale traders. The traders liked the improved quality of the shea butter, but no regular deal was concluded. Issues to

be improved included lack of access to major markets, high transportation costs, difficulty in making payments from a distance, inability of processors to control quality, and delivery date management.

Groundnut oil

Kontagora groundnut-oil traditional processor project: Traditional groundnut-oil processors, with some assistance by their children, were introduced to bookkeeping practice, which aroused their interest in the profitability of their business. The Technical Cooperation Team trained them on group purchase of groundnuts to cut down raw material cost. The amount of groundnuts bought by group purchase increased from 100 kg at the beginning to 800 kg after nine months. The frequency of purchases increased from every other week to every week. Demand for by-products as raw materials for *kuli-kuli* increased, and profitability of the business improved. The oil processors understood the benefits of group purchase. Another factor that reduced costs was a manual oil-extraction device. Processing by the oil-extraction device reached 60% of the total production, which increased production volume and reduced production costs by cutting down on outsourcing. On the other hand, the pilot project could not help them explore new distribution channels and markets. Therefore, the improved profitability did not increase profits and value-added products enough.

Kontagora groundnut-oil mechanical processor project: Mechanical processors often do not operate long or well, because of frequent blackouts and the short lifespan of spare parts (made in China). The Technical Cooperation Team proposed use of locally available long-life spare parts. The mechanical processors wanted to try a sample of the spare parts to confirm their quality before agreeing to buy any. A sample could not be obtained during the pilot project period, however, because the local fabricator could not obtain the steel materials he needed. The mechanical processors were also considering purchase of an oil filter, but that also did not happen, because the fabricators reacted to customers' needs very slowly. The processors could not afford to buy what they need, their customer service was poor, and they are too weak financially to consider long-term investment.

Yams

Paikoro yam trader project: Analysis of the long-term storage of yams found that loss of yams resulted mainly from feeding damage by rats, the breeding of disease-causing bacteria, and germination. Given this finding, the pilot project constructed yam shelves for storage on a trial basis. However, monitoring after shelf construction revealed that yam traders sell yams immediately after purchasing them at the market and do not store them for long. Yam farmers, instead, store yams for a long time for shipping reasons. Yam traders deal with domestic customers, but they do not have strong motivation to explore foreign markets. Although they are interested in export, they do not have enough information or motivation to market their yams abroad. BDS provision was hindered by the fraudulent practices of the Yam Traders Cooperative, which was the target of the pilot project. Nevertheless, bookkeeping was continued in order to explain the financial status of the yam-trading business.

7. Hypotheses examined by pilot projects

Cost of government services and GDP growth

For the cost of government services and GDP growth, the following two hypotheses were examined.

- 1-1 The increase in added value (GDP) generated by a value chain of a target product is greater than the cost of services provided by SMEDAN (economic efficiency exists for services).
- 1-2 The increase in tax revenue based on the added value (GDP) generated by a value chain of a target product is greater than the cost of services provided by SMEDAN (financial efficiency exists for services).

During the nine months of the pilot project period, no increase in the added value of enterprises that received BDS was observed. It was confirmed that the added value produced by target value chains was less than the cost of BDS provision. Therefore, for the pilot project period, the economic and financial efficiency of BDS was low; thus, the hypotheses are rejected.

It was also asked whether the hypotheses would be proved in the future. For rice products in Kano State, hypothesis 1-1 of economic efficiency would be supported if BDS of 100 million naira were provided to rice millers in Kano State for one year to produce added value of 270 million naira. Assuming the tax rate is 15%, 100 million naira of public investment would be collected within two years, which would support hypothesis 1-2 (financial efficiency).

The future prospects look good for traditional shea products in the Kacha area of Niger State, where BDS was provided under the pilot project. Hypothesis 1-1 is expected to be supported, with the estimate of 24,000 naira as the monthly cost of BDS provision and 40,000 naira of monthly added value. On the other hand, traditional shea-butter producers belong to the informal sector and do not pay tax; so public investment in BDS for shea-butter processors would not be recovered. Therefore, hypothesis 1-2 would not be supported. If BDS were provided to all the traditional shea-butter processors in the state, the target enterprises would be a huge number of micro-enterprises scattered all over the state, making the cost of BDS provision very high. Based on the conditions above, neither hypothesis is likely to be supported.

Profitability and employment of MSMEs

Considering the profitability and employment of MSMEs, the following two hypotheses were set up.

- 2-1. MSMEs improve profitability (improved financial efficiency of businesses).
- 2-2. MSMEs increase the number of employees.

From the profitability perspective, some types of businesses showed potential to increase profits by reducing costs, whereas some others kept books continuously to be able to analyse the profitability of their businesses. However, there was no business type that presented a clear increase in profit as a result of BDS. Judging from these findings, hypothesis 2-1 was not supported during the pilot project period. On the other hand, the capacity being developed by such enterprises and the presence of fabricators marketing improved equipment commercially suggest that hypothesis 2-1 would probably be confirmed in the future if BDS is continuously provided.

From the employment perspective, no information was confirmed during the pilot project period that could demonstrate a relationship between BDS provision and an increase in the number of employees. Therefore, hypothesis 2-2 was not supported. On the other hand, some types of business did tend to increase profits and expand the scale of their business. If BDS is continuously provided to expanding businesses, employment would increase in an economy as a whole. Therefore, hypothesis 2-2 would probably be confirmed if BDS provision continues.

Poverty reduction

On the profitability and employment of MSMEs, the following hypothesis was set up.

- 3-1. The increase in added value generated by micro-enterprises is greater than that generated by small and medium enterprises.

Hypothesis 3-1 could not be examined, for two reasons: the financial information collected during the pilot project period was not accurate enough to allow analysis for this hypothesis; and no clear increase in added value was observed.

In order to examine this hypothesis, the cost performance of BDS provision was analysed. People engaged in micro-enterprises tend to have lower levels of education, their management capacity tends to be small, and many of them are household industries that do not wish to expand the scale of their business. The analysis showed that the cost of BDS provision to micro-enterprises per unit increase in added value is higher than the cost of BDS provision to small- and medium-sized enterprises. Therefore, in terms of BDS cost performance, BDS provision should focus on small- and medium-sized enterprises. It would be a policy issue to decide how much of available resources should be allocated to support micro-enterprises.

Entrepreneurship

Concerning the profitability and employment of MSMEs, the following hypothesis was set up.

- 4-1. MSMEs assisted by SMEDAN improve entrepreneurship.

Entrepreneurship was monitored by implementing the pilot project. As a result, enterprises were improved in entrepreneurship by BDS provision; so hypothesis 4-1 was proved. Entrepreneurship can be examined by observing practices of enterprises, such as continuation of bookkeeping. Many enterprises adopted bookkeeping practices with the support of BDS during the pilot project period. Provision of BDS also helped enterprises improve entrepreneurship in other ways, such as continuing 5S practice, filing an application for a loan, and attempting to introduce machines.

CHAPTER 1. Background of pilot project implementation

Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) developed a concept paper of the One Local Government One Product Programme (OLOP Programme) in April 2009 by adopting the concept of the One Village One Product (OVOP) movement implemented in Oita Prefecture in Japan to revitalize rural economy, enhance employment opportunities, and alleviate poverty in rural areas in Nigeria. The government of Nigeria and Japan have agreed to implement Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalizing the Rural Economy in the Federal Republic of Nigeria (the Technical Cooperation) from February 2010 to verify implementation methods and institutional arrangements for the promotion of OLOP Programme. The Project has been implemented by the Technical Cooperation Team.

The Technical Cooperation Team reviewed the OLOP Programme Concept Paper with the following four aspects: 1) relevance of the basic concept of the OLOP Programme to concerned policies, 2) feasibility of the proposed institutional framework, 3) MSMEs' demand for BDS provisions, and 4) effectiveness of the proposed approach of the OLOP Programme.

To review and verify the above four aspects of the OLOP Programme Concept Paper, the pilot projects had been conducted from September 2010 to July 2011 in Kano and Niger States. During the period of pilot project implementation, baseline and value chain surveys and analysis, and the delivery of BDSs to approximately 50 selected enterprises of the six products shown in Table 1-1 had been carried out.

Table 1-1 List of pilot projects

State	Product name	Pilot project name
Kano State	1) Rice	Kura rice parboiler project Kura rice miller project （Kura rice trader project）*1 （Fagge rice trader project）*1
	2) Leather	Kano traditional tannery project Kano leather products manufacturers project
	3) Groundnut oil	Dawakin Tofa groundnut oil traditional processor project Kano groundnut oil mechanical processor project
Niger State	1) Shea products	Kacha shea butter traditional processor project
	2) Groundnut oil	Kontagora groundnut oil traditional processor project Kontagora groundnut oil mechanical processor project
	3) Yam	Paiko yam trader project

Note: 1) Limited intervention to the rice traders is provided due to small BDS demand.

In each state two national staff members of the Technical Cooperation Team were hired to experiment the delivery of BDSs. The experts of the team conducted baseline and value chain surveys and analysis, business diagnoses and consultations, technical development, marketing, facilitation of bank loans, monitoring and evaluation of the pilot projects, and capacity development of the national staff members. Through the implementation of the pilot projects it was verified that activities of the national staff members and experts can be implemented by the government agencies.

The numbers of MSMEs belonging to the selected products and their state-wide size of economy in both Kano and Niger States were estimated to determine the scale of public investment necessary to

implement Action Plan effectively. The market structures and behaviours of the selected products were analysed to determine issues, possible solutions, and necessary public resources to deliver appropriate BDSs. Types of BDSs and timing of their delivery were also examined to obtain higher value-added products.

In the following chapters results of the pilot project implementation are reported.

CHAPTER 2. Selection of products for pilot project

2.1 Ranking of products by stakeholders in in Kano State

The Value Chain Selection Workshop was held on June 7, 2010 at the Kano State Ministry of Commerce, Industry, Cooperatives, and Tourism (KMCICT), with around 20 participants from major stakeholders, including SMEDAN, KMCICT, and other MSME development-related agencies. The objectives of the workshop were: 1) to obtain four to five additional value chains for the final evaluation and selection process; and 2) to select three value chains for pilot project intervention.

Participants, divided into two groups, were asked to evaluate selected value chains by the following criteria:

- Market needs
- Business potential of product
- Positive impact on local economy and gender equality
- Policy priority
- Complement to internal and/or externally supported interventions

The evaluation was conducted based on the score classification scheme as follows: very high (5 points), high (4 points), average (3 points), low (2 points), and very low (1 point). Three of the value chains were preselected prior to the workshop based on discussions between the government of Niger State and Project Team. In addition to the three preselected value chains, six value chains were selected by the workshop participations for a ranking exercise.

Results of the participants' evaluation of the selected value chains are summarised in Table 2-1. Opinions of the participants are compiled in Annex 1.

Table 2-1 Results of value chain ranking exercise in Kano State

	Score/Rank	Score[*2] (point value)													Rank		
	Ranking criteria[*1]	(1)		(2)		(3)		(4)		(5)		Total					
	Working group	A	B	A	B	A	B	A	B	A	B	A	B	A+B	A	B	A&B
Short-listed value chain	1 Rice[*3]	5	5	5	5	5	5	5	5	5	4	25	24	49	1	1	1
	2 Groundnut[*3]	5	5	4	5	5	5	5	5	4	3	23	23	46	3	3	3
	3 Leather products[*3]	4	4	4	5	5	3	5	5	4	3	22	20	42	4	4	4
	4 Dried hibiscus	4	3	4	3	4	4	2	2	1	1	15	13	28	7	6	7
	5 Soybean	3	4	4	4	4	5	4	4	3	3	18	20	38	6	4	5
	6 Moringa	3	3	5	2	3	2	4	1	4	2	19	10	29	5	7	6
	7 Tomato	5	5	5	5	5	5	5	5	4	4	24	24	48	2	1	2
	8 Tie and dye[*3]	2	2	3	2	3	2	3	1	3	1	14	8	22	8	8	8
	9 Sesame[*3]	Not short-listed															

Note 1: Ranking criteria are (1) market needs, (2) business potential of product, (3) positive impacts on local economy and gender equality, (4) policy priority, and (5) complement to internally and/or externally supported interventions. Note 2: Score classification scheme is: very high (5 points), high (4 points), average (3 points), low (2 points), and very low (1 point). Note 3: Value chains proposed for pilot project in the inception report compiled by the Technical Cooperation Tam.

Contrary to the team's assumption that sesame and tie and dye value chains are to be selected for pilot project implementation, the sesame value chain was not shortlisted at the workshop, and the tie and dye value chain was selected but least preferred for the pilot project implementation. The exclusion of sesame from the list is supported by the information provided by RMM Global Company Limited, which is a large-scale private enterprise processing and exporting sesame to, for example, Japan. The company management characterises the value chain as 1) a very short value chain (producers/farmers to processors/consumers), 2) a value chain consisting of mainly large-scale operators and businesses influenced by the operators, 3) skewed value addition opportunities to large-scale processing and exporting enterprises, and 4) relatively small market compared to those of other agricultural commodities.

Although the tie and dye value chain was shortlisted by the workshop participants, it received the lowest ranking among the eight value chains evaluated. The reasons identified by the participants for the lowest preference are: 1) gradual decline in the tie and dye industry, although its historical value cannot be simply ignored; 2) small contribution to GDP growth due to its small and specialised market; 3) heavy reliance on imports for raw materials and increasing cost of such materials; and 4) reliance on wealthy customers in Kano State.

Based on results of the ranking workshop and discussions held among SMEDAN, KMCICT, and Project Team, rice (ranked first), groundnut oil (ranked 3rd), and leather products (ranked 4th) were chosen as the value chains for value chain analyses, baseline survey, and pilot project implementation. The tomato value chain, ranked second, was not selected due to its very short value chain consisting mainly of the raw material (tomato) market.

2.2 Ranking of products by stakeholders in in Niger State

A workshop for value chain ranking was held with the Niger State government officials on June 23, 2010. There were 22 participants from FMCI, SMEDAN, NSCEPA, ADP, GTZ, and other Niger State agencies related to MSMEs development. Ranking criteria and scoring method are the same as those applied to the workshop in Kano State.

Ranking results are shown in Table 2-2. Opinions of the participants are compiled in Annex 2. The technical cooperation team proposed shea butter and rice as target commodities in the inception report. Those commodities ranked higher in the workshop: first place for rice and second for shea product (shea nuts and butter).

Based on the workshop results, the technical cooperation team facilitated the value chain selection process by SMEDAN and NSCEPA. The counterparts concluded that shea product, the second ranking value chain, should be selected as the target commodity, since the state agencies are actively involved in shea industry promotion with assistance from GTZ. Yam, ranking third place in the workshop, is selected as the target commodity. Ground nut oil was selected as the third commodity for value chain analysis and pilot project based on the selection criterion that commodities having had little government interventions should be selected. The examination of the ranking criterion number 5 yielded results that rice, ranking first in the workshop, was not selected because the commodity has been supported by intensive public interventions, such as FADAMA and other irrigation development schemes. As a result, the ground nut oil, selected as a target commodity in Kano State, is selected for the project due to low degree of government interventions, involvement of a large number of female micro enterprises in the value chain, and its market linkages to the market in Kano State.

Table 2-2 Results of value chain ranking exercise in Niger State

	Score/Rank	Score[*2] (point value)													Rank		
	Ranking criteria[*1]	(1)		(2)		(3)		(4)		(5)		Total					
	Working group	A	B	A	B	A	B	A	B	A	B	A	B	A+B	A	B	A&B
Shortlisted value chain	1 Shea butter[*3]	4	5	5	5	5	5	5	5	5	5	24	25	49	2	1	2
	2 Ground nut oil	4	4	4	5	5	5	4	5	1	3	18	22	40	6	4	6
	3 Yam	5	4	5	5	4	5	5	5	4	5	23	24	47	4	3	3
	4 Rice[*3]	5	5	5	5	5	5	5	5	5	5	25	25	50	1	1	1
	5 Sorghum	4	4	4	5	3	4	5	4	5	3	21	20	41	5	6	5
	6 Brass and glass work	2	3	4	4	2	4	3	4	1	3	12	18	30	8	7	8
	7 Maize	5	4	5	5	5	4	5	5	4	4	24	22	46	2	4	4
	8 Soya beans	4	3	4	3	4	4	3	4	2	3	17	17	34	7	8	7
	9 Locust beans	3	4	3	4	3	4	1	3	1	1	11	16	27	9	9	9

Note 1: Ranking criteria are (1) market needs, (2) business potential of product, (3) positive impacts on local economy and gender equality, (4) policy priority, and (5) complement to internally and/or externally supported interventions. Note 2: Score classification scheme is: very high (5 points), high (4 points), average (3 points), low (2 points), and very low (1 point). Note 3: Value chains proposed for pilot project in the inception report compiled by the Technical Cooperation Tam.

2.3 Overview of the selected value chains

2.3.1 Rice

Rice is one of major staple food crops in Nigeria and also has a high potential to generate cash income to more small-scale farmers in Nigeria. Over the last four decades, rice consumption in Nigeria is growing faster than that of other crops, such as sorghum, maize, and millet, especially in urban areas reaching over 5 million metric tonnes (USAID, 2009). Meanwhile, statistics show that the total annual rice production in Nigeria stands at just 2 million metric tonnes, which is not sufficient to fulfil the increasing domestic demands for rice (FAOSTAT, 2010). Indeed, the volume of rice imported into Nigeria has steadily risen year to year, and exceeds 2.5 million metric tonnes (USAID, 2009), including one million metric tons of rice from Thailand. There is a rice yield gap between imported rice and domestic rice, caused by low productivity of Nigerian rice. However, more significantly, some studies also indicate that urban customers show their preference for imported rice rather than local rice, mainly due to low quality of the local rice (WARDA, 2003, B. Daramola, 2005). Therefore, understanding the market demand and clarifying the key constrains on the rice value chain to improve quality of local rice can contribute to improving the domestic rice market. Although in the last decade the Nigerian government has implemented various policies to protect the local rice industry by imposing heavy custom duties on imported rice and providing subsidies for small farmers to increase productivity, further government support for development of processing methods and improvement of quality through upgrading of small farmers might be required.

2.3.2 Leather

The leather industry has a high potential to enhance income and employment generation in Nigeria. Since the pre-colonial period, Nigeria has produced raw hides and skin from a wide range of animals such as cattle, goats, sheep, and camels in northern states in particular and processed them to manufacture value added leather products, such as shoes and bags, to export mainly to the European Union (A. G. Adebayo, 1992). A recent survey shows that the annual production of sheep skins is around 20 million and that of goat skins is around 10 million (DFID, 2010). In addition, according to

the ITC (the International Trade Centre) calculations based on COMTRADE (Commodity Trade Statistics Database) statistics, the current market share of raw hides and skin and finished leather products in exports is around 3%, worth 680 million US dollars, while the value of the total global market is 28.9 billion US dollars (DFID, 2010). The statistics also show that the export volume of raw hides, skin products, and finished leather products from Nigeria is gradually increasing, although global trade in the leather industry has been declining in the last few years due to the global financial crisis. Although the reason for the growth is not well understood, further development of the leather industry can lead to an expanding market share of Nigerian leather. Because the global market for leather is still a highly competitive and consumer driven market, improving the industry's production, processing, and marketing capacity is vital to boost the leather industry in Nigeria.

2.3.3 Groundnut oil

Nigeria is the fourth largest producer of Groundnut oil in the world, with annual domestic groundnut oil production of 0.7 million metric tons. Although the local groundnut oil yield is less than the output by major groundnut producing countries, such as China and India, the local production of groundnut oil in 2007 increased by about 40% compared to 448 thousands metric tonnes in 1998 (FAOSTAT, 2010). In addition, groundnut oil production and processing create income-generating opportunities for women in rural areas, especially in the northern region. However, during the last three decades, the global market for groundnut oil is steadily declining due to expanding demands for cheaper oils, including vegetable oils (World Bank, 2004). The shrinking global market affects the growth rate of groundnut oil export from Nigeria, which was just 14% in 2007, compared to the groundnut oil export of 7,000 metric tonnes in 1998 (FAOSTAT, 2010). Therefore, because groundnut oil producers have encountered greater difficulty in maintaining their profitability, the development of an effective solution for the current market situation of local producers would be required. Although government support is currently limited, there are policy options to support the local groundnut oil industry through production technology improvement, financing, and capacity enhancement of groundnut oil producers and processors.

2.3.4 Shea nut/butter

Shea tree producing shea nuts is naturally grown in Western Africa Savannah. Among several major producing countries of shea nuts in West Africa, including Ghana, Burkina Faso, Benin, Mali, and Togo, Nigeria is one of the leading countries in shea nut production in the world. More significantly, as the international demand for shea nut/butter is growing in last decades, shea production and processing is expected to generate employment and cash income to small scale farmers, especially women in West Africa (Lamport, 2009). However, while Ghana and Burkina Faso have been dramatically expanding shea business, especially global shea trade to United States, European countries, and Japan, export volume of shea nut/butter from Nigeria has been much lower than those countries. For example, while export volume from Ghana estimates around 350,000 metric tons of raw shea kernels and 30,000 metric tons of shea butter in 2008 (USAID, 2010), the number of export from Nigeria in 2002 stands at just 880 metric tons of shea kernels and no record of shea butter export against 371,000 metric tons of raw shea nut domestic production (GTZ, 2008). One constraint to prevent increase in the export from Nigeria is that quality control in processing from raw shea kernel to shea butter is not appropriately conducted due to low level of production skills and technology applied (GTZ, 2008). In addition, government support to shea industry has been limited compared to other countries. Therefore, although Nigerian local governments recently started to pay more attention to shea sectors, further government support for capacity building in shea production, processing, and marketing through training and financial support for shea sectors is still needed (Lamport, 2009).

2.3.5 Yam

Nigeria is the largest country of yam production in the world and around 70 % of world total yield of 28 million tons of yam tuber is represented by Nigeria (IITA, 1997). Yam is one of major staple food in West Africa, which is mainly consumed for pounded yam, cooked or fried and eaten with sauce, or processed into yam flour. Though Yam has a less amount of vitamins than sweet potato, it contributes to protein and minerals consumption per day to the people living in tropical and subtropical areas (Awoniyi and Omonona, 2007). In addition, as yam's tuber can be stored for four or six months, which shows greater preservation of yam tubers in comparison with cassava and sweet potato, it is an important food during food scarce season in West Africa. Moreover, Yam has played an important role in West African culture as yam is used in wedding and religious events in West Africa (Pius and Odjuvwuederhie, 2006), However, while the statistics shows that production volume in Nigeria is increasing during the last 5 years, yam producers are facing difficulties in meeting the rising demand for yam due to sharp increase of population (Asumugha et al, 2008). One of the major reason is that most of yam producers use traditional technology which leads to low land productivity of yam. Although yam price has gone up in domestic market (Augustine et al, 2008) yam producers were fail to meet market demand due to various constrains to increase production of yam tubers. Therefore, improving the efficiency in yam production is a crucial subject for yam producers and processors in Nigeria. On the other hand, some researches show that yam is currently exporting from West Africa to European countries (Pius and Odjuvwuederhie, 2006), improvement of yam productivity and enhancement of yam export would highly contribute to economic development in Nigeria.

CHAPTER 3. Baseline-survey implementation and results

3.1 Methodology of baseline survey

In the Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalizing the Rural Economy in the Federal Republic of Nigeria, the baseline surveys were conducted in Kano and Niger States in order to understand social and economic conditions and markets of selected products, clusters, business types, and enterprises for effective BDS provision. Setting all MSMEs of the selected business types in the value chains of selected products as a survey population, Project Team selected random samples of MSMEs to conduct the survey. At the same time state-wide surveys were conducted by setting localities of Kano and Niger States as a survey population from which 100 localities were randomly sampled to estimate, for example, the total number of enterprises the selected products. Survey forms are presented in Annex 3 and Annex 4.

Table 3-1 indicates the business type, sample size, business type of pilot-project participants, and population and sample size of the survey. With a total of 1,404 enterprises in 21 different business types as a total population, the survey was conducted against 320 samples of enterprises, with each parameter examined against population.

Information regarding labour force, management measures, business development service provisions from government, non-governmental organizations (NGO), private institutions, finance, profit and loss, and properties of each enterprise was collected through the baseline surveys

3.2 Results of baseline surveys

3.2.1 Estimation of number and economy of targeted business types in the states

In Kano and Niger States, a total of 13 business types were selected as survey targets in order to estimate their total number of enterprises. Based on the estimated number of enterprises, economy size of the target business types was estimated for each state. Table 3-2 indicates the number of enterprises and the economy size of the target business types in each state. Based on locational information obtained through the surveys, geographical distributions of business types were identified.

Approximately 68,000 parboilers, 4,000 millers, and 65,000 traders exist in Kano State. Coexisting with millers, parboilers are located in the southern part of the state. On the other hand, traders are located all over the state while distributing rice. The estimated total added values from traders and millers are NGN 373.5 million and NGN 5.5 billion, respectively, which explains the significant added value from rice trading business.

Approximately 280 traditional tanneries and 1,600 leather manufacturers currently exist in Kano State. Traditional tanneries reside in a very limited location in Kano Municipal. Leather manufacturers are also located in the city area. Both business types are considered unique enterprises requiring specialized techniques. The estimated total added values generated by traditional tanneries and leather manufacturers are NGN 800 million and NGN3.0 billion, respectively.

As for production of groundnut oil, the number of both traditional and mechanical groundnut oil processors was estimated. The estimated number of women residing in rural areas who engage in traditional groundnut oil processing for income generation is around 110,000. On the other hand, mechanical groundnut oil processors are located in the city, with very limited number of enterprises. As regard to mechanical groundnut oil processors, pilot-project results indicate that the profits of those who engage only in groundnut oil processing are low due to strong market competition with other

vegetable oils and to seasonality influences on groundnut prices. Markets of traditionally processed oil exist mainly in local areas, while markets of mechanically processed oil exist in the city. The estimated total added values from traditional and mechanical groundnut oil processors are NGN 8.2 billion and NGN 400 million, respectively.

Table 3-1 Target business types and sample size of baseline survey

(Number of enterprises)

State name/Product name / Cluster ID	Name	Pilot project imple-	Local Government Area	Survey populatio a	Sampl e size b	Weightin g factor c=a/b
Total				**1,404**	**320**	
Kano Sate				**951**	**210**	
Rice				**461**	**96**	
K1.01	Rice trader	Yes	Kura	202	41	4.93
K1.02	Rice miller	Yes	Kura	50	11	4.55
K1.03	Rice parboiler	Yes	Kura	24	10	2.40
K1.04	Rice trader	Yes	Fagge	185	34	5.44
Leather				**204**	**49**	
K2.01	Leather trader		Dala	68	14	4.86
K2.02	Traditional tannery	Yes	Dala	61	16	3.81
K2.03	Leather products manufacturers	Yes	Dala	75	19	3.95
Groundnut oil				**286**	**65**	
K3.01	Groundnut oil traditional processor	Yes	Dawakin Tofa	23	5	4.60
	(consolidated two survey			20	8	2.50
K3.02	Groundnut oil traditional trader		Dawakin Tofa	22	5	4.40
	(consolidated two survey			14	4	3.50
K3.03	Groundnut oil trader		Dawakin Tofa and	10	4	2.50
	(consolidated two survey		Nassarawa	35	7	5.00
K3.04	Groundnut trader		Dawakin Tofa and	24	5	4.80
	(consolidated two survey		Municipal	58	10	5.80
K3.05	Groundnut oil mechanical processor	Yes	Dawakin Tofa and	20	5	4.00
	(consolidated two survey		Kumbotso	60	12	5.00
Niger State				**453**	**110**	
Shea product				**179**	**36**	
N1.01	Shea butter processor	Yes	Katcha	120	24	5.00
N1.02	Shea nut processor		Katcha	59	12	4.92
Groundnut oil				**203**	**45**	
N2.01	Groundnut trader		Kontagora	62	12	5.17
N2.02	Groundnut oil trader		Kontagora	58	12	4.83
N2.03	Groundnut oil traditional processor	Yes	Kontagora	63	11	5.73
N2.04	Groundnut oil mechanical processor	Yes	Kontagora	20	10	2.00
Yam				**71**	**29**	
N3.01	Yam trader	Yes	Paiko	31	10	3.10
N3.02	Yam flour trader		Paiko	21	10	2.10
N3.03	Yam wholesaler	Yes	Paiko	19	9	2.11

Source: Project Team

Table 3-2 Estimation of enterprise numbers and state wide GNP

State name/Product name ID of enterprise type/Enterprise type		Pilot project implementation	Estimation of number of enterprises: No. of selected localities for survey	Total no. of localities in each state	Number of surveyed localities with enterprises concerned	Number of enterprises in surveyed localities	Estimated no. of enterprises in each state	Estimated gross operating profit per one enterprise (1,000 Naira)	Estimated state wide GNP attributed to each enterprise type (Million Naira)
			a	b	c	d	e=d*b/a	f	g=e*f
Kano State									
1) Rice									
K1.01	Rice trader	yes	100	4,676	90	1,381	64,576	5,784	373,527
K1.02	Rice miller	yes	100	4,676	22	90	4,208	1,297	5,460
K1.03	Rice parboiler	yes	100	4,676	54	1,450	67,802	(3,740)	n.a
K1.04	Rice trader	yes						2,410	n.a
2) Leather									
K2.01	Leather trader							5,150	n.a
K2.02	Traditional tannery	yes	100	4,676	2	6	281	2,900	814
K2.03	Leather products manufacturers	yes	100	4,676	6	35	1,637	1,810	2,963
3) Groundnut oil									
K3.01	Groundnut oil traditional processor	yes	100	4,676	96	2,378	111,195	74	8,248
K3.02	Groundnut oil traditional trader							(313)	n.a
K3.03	Groundnut oil trader							2,143	n.a
K3.04	Groundnut trader							5,256	n.a
K3.05	Groundnut oil mechanical processor	yes	100	4,676	2	3	140	3,158	443
Niger State									
1) Shea product									
N1.01	Shea butter traditional processor	yes	100	2,392	69	2,457	58,771	398	23,375
N1.02	Shea nut traditional processor		100	2,392	82	8,013	191,671	469	89,960
	Mechanical shea butter processor		100	2,392	0	0	0		n.a.
2) Groundnut oil									
N2.01	Groundnut trader							14,071	n.a.
N2.02	Groundnut oil trader							64	n.a.
N2.03	Groundnut oil traditional processor	yes	100	2,392	90	2,984	71,377	163	11,659
N2.04	Groundnut oil mechanical processor	yes	100	2,392	9	24	574	23,814	13,671
3) Yam									
N3.01	Yam trader	yes	100	2,392	55	1,802	43,104	6,296	271,371
N3.02	Yam flour trader							2,057	n.a.
N3.03	Yam wholesaler	yes						6,091	n.a.
	Number of yam market		100	2,392	25	25	598		
	Number of yam farmers		100	2,392	44	15,412	368,655		

Source: Project Team

Approximately 59,000 traditional shea butter processors and 190,000 traditional shea nut processors are located in Niger State. Many micro-sized enterprises engage in shea nut processing, generating low profits since collection of widespread shea nuts require a large labour force. Both shea nut and shea butter processors exist all over the state, but their concentration is noted in southern, western, and some northern areas of the state. The estimated total added values from traditional shea butter and shea nut processors are NGN 23.4billion and NGN 90.0 billion, respectively. This figure for traditional

shea nut processors is significantly higher than that for shea butter processors. This observation indicates the large export volume of processed shea nut and the limited production volume of shea butter.

Roughly 71,000 traditional groundnut oil processors and 140 mechanical groundnut oil processors exist in Niger State, whose geographical trend is similar to that of Kano State: traditional groundnut oil processors are located in rural areas while mechanical groundnut oil processors are concentrated in the city. The estimated total added values from traditional and mechanical groundnut oil processors are NGN 11.7 billion and NGN 13.7billion, respectively.

43,000 traders engage in trading of yams that are produced in the southeast area of Niger State. Roughly 600 yam markets are located within the state, with 370,000 farmers engaging in yam production. The total added value from yam traders is NGN 271.4 billion.

3.2.2 Size of economy and business

Table 3-3 indicates the figures for annual production sales, raw-material costs, sales and management costs, and salary, assuming that most of the enterprises do not practice bookkeeping. Therefore, figures indicated in the table are assumed to include significantly large level of error. On the other hand, figures for production sales and salary are assumed reliable based on survey results. Estimated size of economy is calculated based on total production sales while level of added value is estimated based on total amount of salary identified through the surveys.

Table 3-3 indicates the size of economy for 21 target enterprises. The total size of economy for the entire population of 1,404 enterprises is represented as NGN 31.6 billion (17.6 billion Yen) production sales. Rice traders in Kura (NGN 5.6 billion), rice traders in Nasarawa (NGN 2.6 billion), leather traders (NGN1.7 billion), groundnut oil traders (NGN 2.2 billion), groundnut traders (NGN 7.2 billion), and mechanical groundnut oil processors (NGN 4.7 billion) are considered to have large economy sizes in Kano State. On the other hand, groundnuts traders in Kontagora (NGN 2.4 billion), mechanical groundnut oil processors (NGN1.3 billion), and yam flour traders in Paiko (NGN 1.3 billion) are considered to have large economy sizes in Niger State. As a general trend, traders have a significant influence on the value chain of processing and distribution activities due to financial values of their products. On the other hand, size of economy created through traditional measures of processing and distribution for the large number of existing enterprises is small due to the small business operations of each enterprise. Means of development as well as approaches to these weak enterprises need to be carefully considered and applied to the industrial policies of the federal government of Nigeria.

Table 3-3 indicates the estimated added value, represented as gross operating profit, of each business type at the state level. As previously explained, most of the survey-targeted enterprises do not practice bookkeeping. Therefore, gross operating profit and net operating profit are likely to be indicated with higher values since the estimated material costs are likely to be lower than the actual costs, a discrepancy that originates from insufficient bookkeeping. Gross operating profit consists of sales and management costs while net operating profit includes salary. Selecting salary figure as the most trustworthy one among the three figures, added value received by the labour force is estimated. A total of 6,025 employees including employers are identified in the survey, which results in NGN 0.8 billion of total added value. In this analysis, it is estimated that higher absolute level of production results in higher absolute level of added value generated as salary.

Table 3-3 Size of economy of target business types

(Million Naira)

State name/Product name Cluster ID and name	Pilot project implementation	Production	Raw material	Gross operating profit	Expenses		Net operating profit	Total no. of employees
					Total	Salary		
		a	b	c=a-b	d	e	f=c-d	g
Total		**31,643**	**26,827**	**4,816**	**1,810**	**799**	**3,006**	**6,025**
Kano State		**25,322**	**22,298**	**3,024**	**1,489**	**671**	**1,535**	**4,130**
1) Rice		**8,326**	**6,737**	**1,589**	**445**	**259**	**1,145**	**1,583**
K1.01 Rice trader	yes	5,568	4,399	1,168	299	151	869	852
K1.02 Rice miller	yes	77	12	65	32	29	33	186
K1.03 Rice parboiler	yes	119	209	-90	4	6	-94	103
K1.04 Rice trader	yes	2,562	2,117	446	110	73	336	441
2) Leather		**2,819**	**2,156**	**663**	**503**	**139**	**160**	**885**
K2.01 Leather trader		1,696	1,346	350	91	62	259	330
K2.02 Traditional tannery	yes	909	733	177	356	44	-179	263
K2.03 Leather products manufacturers	yes	213	77	136	56	33	80	292
3) Groundnut oil		**14,177**	**13,405**	**772**	**541**	**272**	**231**	**1,662**
K3.01 Groundnut oil traditional processo	yes	68	65	3	8	5	-5	178
K3.02 Groundnut oil traditional trader		40	52	-11	5	4	-16	119
K3.03 Groundnut oil trader		2,159	2,062	96	51	24	45	123
K3.04 Groundnut trader		7,205	6,774	431	217	89	214	434
K3.05 Groundnut oil mechanical process	yes	4,704	4,452	253	259	150	-6	809
Niger State		**6,321**	**4,529**	**1,792**	**321**	**129**	**1,471**	**1,896**
1) Shea product		**140**	**65**	**75**	**21**	**15**	**54**	**921**
N1.01 Shea butter traditional processor	yes	94	46	48	19	12	29	690
N1.02 Shea nut traditional processor		46	19	28	3	3	25	231
2) Groundnut oil		**3,791**	**2,428**	**1,363**	**193**	**72**	**1,170**	**721**
N2.01 Groundnut trader		2,390	1,517	872	75	37	798	248
N2.02 Groundnut oil trader		80	77	4	6	3	-2	145
N2.03 Groundnut oil traditional processo	yes	62	52	10	19	5	-9	172
N2.04 Groundnut oil mechanical process	yes	1,258	782	476	93	28	383	156
3) Yam		**2,390**	**2,036**	**354**	**107**	**42**	**247**	**254**
N3.01 Yam trader	yes	983	788	195	46	18	149	109
N3.02 Yam flour trader		155	112	43	8	6	35	74
N3.03 Yam wholesaler	yes	1,252	1,137	116	53	18	63	72

Source: Project Team

Table 3-4 shows the estimated annual profit and loss for each enterprise that belongs to the target business types of the survey. According to this data, it is estimated that the level of error for production amount and salary is low. Average production of all enterprises is NGN 22,530,000. Difference between below- and above-average enterprises is noted based on business type. Business types with low production capacities are millers (NGN1,540,000), parboilers (NGN4,960,000), leather manufacturers (NGN 2,840,000), traditional groundnut oil processors (NGN 1,540,000), and traditional groundnut oil traders (NGN 1,120,000) in Kano State as well as traditional shea butter processors (NGN 780,000), traditional shea nuts processor (NGN 790,000), and traditional groundnut

oil processors (NGN 990,000) in Niger State. During pilot-project implementation, enterprises that belong to these business types are targeted.

Table 3-4 Annual profit and loss of enterprises

(Thousand Naira)

State name/Product name Cluster ID and name	Pilot project implementation	Production	Raw material	Gross operating profit	Expenses				Net operating profit	Employees per enterprise	Production per employee	Salary per employee
					Total	Salary						
						Salary	% to expenses	% to production				
		a	b	c=a-b	d	e	f = e/d	g = e/a	h=c-d	i	j = a/i	k = e/i
Total		**22,538**	**19,107**	**3,431**	**1,289**	**569**	**44%**	**3%**	**2,141**	**4.29**	**5,252**	**133**
Kano State		**26,626**	**23,446**	**3,180**	**1,566**	**705**	**45%**	**3%**	**1,614**	**4.34**	**6,132**	**162**
1) Rice		**18,062**	**14,614**	**3,448**	**965**	**563**	**58%**	**3%**	**2,483**	**3.43**	**5,261**	**164**
K1.01 Rice trader	yes	27,563	21,779	5,784	1,481	748	51%	3%	4,304	4.22	6,532	177
K1.02 Rice miller	yes	1,542	244	1,297	638	577	90%	37%	659	3.73	414	155
K1.03 Rice parboiler	yes	4,961	8,702	(3,740)	177	270	153%	5%	(3,918)	4.30	1,154	63
K1.04 Rice trader	yes	13,851	11,441	2,410	592	395	67%	3%	1,818	2.38	5,814	166
2) Leather		**13,817**	**10,568**	**3,249**	**2,467**	**682**	**28%**	**5%**	**783**	**4.34**	**3,183**	**157**
K2.01 Leather trader		24,941	19,791	5,150	1,338	917	69%	4%	3,812	4.86	5,135	189
K2.02 Traditional tannery	yes	14,910	12,010	2,900	5,841	720	12%	5%	(2,941)	4.31	3,457	167
K2.03 Leather products manufacturers	yes	2,842	1,032	1,810	745	439	59%	15%	1,065	3.89	730	113
3) Groundnut oil		**49,569**	**46,870**	**2,699**	**1,891**	**951**	**50%**	**2%**	**808**	**5.81**	**8,532**	**164**
K3.01 Groundnut oil traditional processor	yes	1,590	1,516	74	197	112	57%	7%	(123)	4.13	385	27
K3.02 Groundnut oil traditional trader		1,118	1,431	(313)	143	108	75%	10%	(457)	3.29	340	33
K3.03 Groundnut oil trader		47,971	45,828	2,143	1,134	540	48%	1%	1,009	2.72	17,622	198
K3.04 Groundnut trader		87,865	82,609	5,256	2,651	1,085	41%	1%	2,605	5.29	16,601	205
K3.05 Groundnut oil mechanical processor	yes	58,806	55,648	3,158	3,235	1,874	58%	3%	(78)	10.11	5,815	185
Niger State		**13,954**	**9,998**	**3,956**	**709**	**284**	**40%**	**2%**	**3,247**	**4.18**	**3,335**	**68**
1) Shea product		**784**	**363**	**421**	**119**	**84**	**70%**	**11%**	**302**	**5.15**	**152**	**16**
N1.01 Shea butter traditional processor	yes	783	385	398	155	102	66%	13%	243	5.75	136	18
N1.02 Shea nut traditional processor		787	318	469	48	47	98%	6%	421	3.92	201	12
2) Groundnut oil		**18,673**	**11,960**	**6,713**	**948**	**355**	**37%**	**2%**	**5,764**	**3.55**	**5,259**	**100**
N2.01 Groundnut trader		38,545	24,474	14,071	1,202	589	49%	2%	12,869	4.00	9,636	147
N2.02 Groundnut oil trader		1,387	1,323	64	96	59	61%	4%	(32)	2.50	555	24
N2.03 Groundnut oil traditional processor	yes	985	822	163	304	73	24%	7%	(141)	2.73	361	27
N2.04 Groundnut oil mechanical processor	yes	62,912	39,098	23,814	4,662	1,375	30%	2%	19,152	7.80	8,066	176
3) Yam		**33,666**	**28,678**	**4,987**	**1,513**	**586**	**39%**	**2%**	**3,474**	**3.57**	**9,419**	**164**
N3.01 Yam trader	yes	31,700	25,404	6,296	1,484	591	40%	2%	4,811	3.50	9,057	169
N3.02 Yam flour trader		7,390	5,333	2,057	404	274	68%	4%	1,653	3.50	2,111	78
N3.03 Yam wholesaler	yes	65,913	59,822	6,091	2,785	922	33%	1%	3,306	3.78	17,448	244

Source: Project Team

As regard to average annual salary, the level is low for enterprises that belong to these business types. For example, the average annual salary of traditional shea butter processors in Niger State is NGN 18,000. One reason for such low salary is the use of family members in the labour force without pay.

3.2.3 Formal and informal sectors

Table 3-5 shows the registration status of the survey-targeted enterprises. Associating registered enterprises with formal sectors and non-registered enterprises with informal sectors, 20% of enterprises belong to the formal sector while 80% belong to the informal sector. This means that 80% of enterprises need to register with the government as individual enterprises or as a group in order to receive business development services (BDS) from public sectors.

Table 3-5 Enterprise registration

(% to the total number of enterprises)

State name/Product name Cluster ID and name	Incorporated	Informal	Not known	Total	No. of enterprises
Total	**20%**	**67%**	**13%**	**100%**	**1,404**
Kano State	**18%**	**64%**	**19%**	**100%**	**951**
1) Rice	**11%**	**75%**	**14%**	**100%**	**461**
K1.01 Rice trader	15%	78%	7%	100%	202
K1.02 Rice miller	9%	91%	0%	100%	50
K1.03 Rice parboiler	70%	20%	10%	100%	24
K1.04 Rice trader	0%	74%	26%	100%	185
2) Leather	**20%**	**63%**	**17%**	**100%**	**204**
K2.01 Leather trader	14%	57%	29%	100%	68
K2.02 Traditional tannery	19%	69%	13%	100%	61
K2.03 Leather products manufacturers	26%	63%	11%	100%	75
3) Groundnut oil	**27%**	**47%**	**26%**	**100%**	**286**
K3.01 Groundnut oil traditional processor	41%	21%	38%	100%	43
K3.02 Groundnut oil traditional trader	39%	0%	61%	100%	36
K3.03 Groundnut oil trader	0%	72%	28%	100%	45
K3.04 Groundnut trader	0%	75%	25%	100%	82
K3.05 Groundnut oil mechanical processor	56%	39%	5%	100%	80
Niger State	**23%**	**74%**	**2%**	**100%**	**453**
1) Shea product	**19%**	**81%**	**0%**	**100%**	**179**
N1.01 Shea butter traditional processor	21%	79%	0%	100%	120
N1.02 Shea nut traditional processor	17%	83%	0%	100%	59
2) Groundnut oil	**24%**	**73%**	**3%**	**100%**	**203**
N2.01 Groundnut trader	33%	67%	0%	100%	62
N2.02 Groundnut oil trader	50%	50%	0%	100%	58
N2.03 Groundnut oil traditional processor	0%	91%	9%	100%	63
N2.04 Groundnut oil mechanical processor	0%	100%	0%	100%	20
3) Yam	**31%**	**63%**	**6%**	**100%**	**71**
N3.01 Yam trader	30%	70%	0%	100%	31
N3.02 Yam flour trader	20%	80%	0%	100%	21
N3.03 Yam wholesaler	44%	33%	22%	100%	19

Source: Project Team

Registration status differs by business type. 50 % of parboilers and mechanical groundnut oil processors register with the government while none of the groundnuts traders register with the government. Target enterprises for public BDS provisions need to be expanded by facilitating the registration process.

Table 3-6 Number of employees

(% to total number of enterprises)

State name/Product name / Cluster ID and name	Number of employees (persons)													No. of enterprises	Employees per enterprise
	1	2	3	4	5	6	7	8	9	10	10<	?	Total		
Total	**8%**	**13%**	**27%**	**17%**	**16%**	**4%**	**4%**	**1%**	**1%**	**1%**	**5%**	**3%**	**100%**	**1,404**	**4.29**
Kano State	**9%**	**13%**	**26%**	**15%**	**18%**	**4%**	**3%**	**1%**	**2%**	**2%**	**6%**	**1%**	**100%**	**951**	**4.34**
1) Rice	**15%**	**19%**	**32%**	**12%**	**9%**	**3%**	**1%**		**2%**	**1%**	**2%**	**2%**	**100%**	**461**	**3.43**
K1.01 Rice trader	12%	10%	37%	10%	7%	5%	2%		5%	2%	5%	5%	100%	202	4.22
K1.02 Rice miller		18%	27%	27%	18%	9%							100%	50	3.73
K1.03 Rice parboiler			30%	10%	60%								100%	24	4.30
K1.04 Rice trader	24%	32%	29%	12%	3%								100%	185	2.38
2) Leather	**4%**	**4%**	**15%**	**24%**	**42%**	**5%**	**2%**				**2%**	**2%**	**100%**	**204**	**4.34**
K2.01 Leather trader			29%	14%	36%	14%					7%		100%	68	4.86
K2.02 Traditional tannery	6%	6%	6%	13%	69%								100%	61	4.31
K2.03 Leather products manufacturers	5%	5%	11%	42%	26%		5%					5%	100%	75	3.89
3) Groundnut oil	**3%**	**8%**	**24%**	**14%**	**16%**	**5%**	**6%**	**4%**	**2%**	**3%**	**14%**		**100%**	**286**	**5.81**
K3.01 Groundnut oil traditional processor		6%	29%	12%	53%								100%	43	4.13
K3.02 Groundnut oil traditional trader		12%	56%	22%	10%								100%	36	3.29
K3.03 Groundnut oil trader	11%	28%	56%				6%						100%	45	2.72
K3.04 Groundnut trader			13%	34%	14%	13%	13%	7%		6%			100%	82	5.29
K3.05 Groundnut oil mechanical processor	6%	5%			10%	5%	6%	6%	6%	6%	49%		100%	80	10.11
Niger State	**4%**	**13%**	**28%**	**20%**	**10%**	**5%**	**6%**	**2%**		**1%**	**4%**	**6%**	**100%**	**453**	**4.18**
1) Shea product			**28%**	**22%**	**8%**	**11%**	**11%**	**3%**		**3%**	**6%**	**8%**	**100%**	**179**	**5.15**
N1.01 Shea butter traditional processor			21%	21%	4%	13%	17%	4%		4%	8%	8%	100%	120	5.75
N1.02 Shea nut traditional processor			42%	25%	17%	8%						8%	100%	59	3.92
2) Groundnut oil	**8%**	**27%**	**25%**	**13%**	**12%**	**1%**	**3%**	**3%**			**3%**	**6%**	**100%**	**203**	**3.55**
N2.01 Groundnut trader		17%	25%	25%	25%			8%					100%	62	4.00
N2.02 Groundnut oil trader	8%	67%		17%	8%								100%	58	2.50
N2.03 Groundnut oil traditional processor	18%	9%	55%									18%	100%	63	2.73
N2.04 Groundnut oil mechanical processor				10%	20%	10%	30%				30%		100%	20	7.80
3) Yam	**4%**	**9%**	**37%**	**34%**	**10%**	**3%**						**3%**	**100%**	**71**	**3.57**
N3.01 Yam trader	10%		30%	50%	10%								100%	31	3.50
N3.02 Yam flour trader		20%	50%	10%	10%	10%							100%	21	3.50
N3.03 Yam wholesaler		11%	33%	33%	11%							11%	100%	19	3.78

Source: Project Team

3.2.4 Status of enterprise labour force

Statuses of enterprise labour force for target business types are analysed with categorizations including number of employees, position and sex, educational background, age and sex, employment type, and salary. Results are indicated in Table 3-6, Table 3-7, Table 3-8, Table 3-9, Table 3-10, and Table 3-11. Selection of target enterprises for BDS provisions, service-provision methodologies, and

measurements of expected impact are examined based on comparison of the above collected information and dates through pilot-project implementation.

Number of employees for each business type and average number of employees per enterprise are indicated in Table 3-6. Average number of employee ranges from 2.38 rice traders in Kano State to 10.11 mechanical groundnut oil processors in Kano State.

Table 3-7 Responsibility and gender of employees

(% to total number of employees)

State name/Product name Cluster ID and name	Gender of employees				Responsibility of employees						
	Male	Female	Not known	Total	Manager	Accountant	Labourer	Technicians	Other	Total	Total no. of employees
Average	**70%**	**28%**	**2%**	**100%**	**24%**	**4%**	**64%**	**5%**	**3%**	**100%**	**6,025**
Kano State	**86%**	**12%**	**2%**	**100%**	**23%**	**5%**	**61%**	**6%**	**5%**	**100%**	**4,130**
1) Rice	**85%**	**13%**	**2%**	**100%**	**29%**	**5%**	**49%**	**10%**	**7%**	**100%**	**1,583**
K1.01 Rice trader	87%	10%	3%	100%	24%		66%	10%	1%	100%	852
K1.02 Rice miller	95%	5%		100%	27%		46%	27%		100%	186
K1.03 Rice parboiler		100%		100%	19%		63%	19%		100%	103
K1.04 Rice trader	98%	2%		100%	42%	19%	15%	1%	23%	100%	441
2) Leather	**93%**	**5%**	**2%**	**100%**	**23%**	**3%**	**68%**	**4%**	**2%**	**100%**	**885**
K2.01 Leather trader	100%			100%	21%	4%	69%		6%	100%	330
K2.02 Traditional tannery	94%		6%	100%	23%	6%	71%			100%	263
K2.03 Leather products manufacturers	85%	15%		100%	26%		64%	11%		100%	292
3) Groundnut oil	**82%**	**14%**	**4%**	**100%**	**18%**	**7%**	**68%**	**4%**	**4%**	**100%**	**1,662**
K3.01 Groundnut oil traditional processor	17%	83%		100%	24%		58%	13%	5%	100%	178
K3.02 Groundnut oil traditional trader	22%	78%		100%	30%	4%	66%			100%	119
K3.03 Groundnut oil trader	100%			100%	37%	20%	43%			100%	123
K3.04 Groundnut trader	96%		4%	100%	19%	5%	65%		12%	100%	434
K3.05 Groundnut oil mechanical processor	95%		5%	100%	11%	7%	76%	6%		100%	809
Niger State	**37%**	**63%**		**100%**	**24%**	**2%**	**70%**	**2%**	**1%**	**100%**	**1,896**
1) Shea product	**9%**	**91%**		**100%**	**19%**	**2%**	**75%**	**2%**	**2%**	**100%**	**921**
N1.01 Shea butter traditional processor	9%	91%		100%	17%	3%	75%	2%	2%	100%	690
N1.02 Shea nut traditional processor	6%	94%		100%	26%		74%			100%	231
2) Groundnut oil	**66%**	**34%**		**100%**	**29%**	**3%**	**65%**	**2%**	**1%**	**100%**	**721**
N2.01 Groundnut trader	98%	2%		100%	27%		73%			100%	248
N2.02 Groundnut oil trader	63%	37%		100%	40%	3%	53%		3%	100%	145
N2.03 Groundnut oil traditional processor		100%		100%	37%		63%			100%	172
N2.04 Groundnut oil mechanical processor	91%	9%		100%	13%	12%	63%	12%	1%	100%	156
3) Yam	**55%**	**45%**		**100%**	**29%**	**2%**	**70%**			**100%**	**254**
N3.01 Yam trader	66%	34%		100%	29%		71%			100%	109
N3.02 Yam flour trader	40%	60%		100%	29%	3%	69%			100%	74
N3.03 Yam wholesaler	56%	44%		100%	29%	3%	68%			100%	72

Source: Project Team

As regard to distribution of employees, one distinction was identified: wide distribution is represented by rice traders while narrow distribution is represented by parboilers. Enterprises with a wide distribution of employees are business types with a loose relationship between size of enterprise and efficiency of processing and distribution. Development possibilities for small enterprises that belong

to this business type are high. On the other hand, development possibilities under business types with concentrated small enterprises are low since the efficiency of processing and distribution decreases with enterprise size.

Table 3-7 indicates the sex and position of employees. Business types with more than 50% female employees are parboilers and all other traditional industries while all other business types are dominated by males. Yam-related business type is the only exception: sex ratio of employees is nearly half and half. Most enterprises consist of owners and workers. Business types with relatively large sizes such as rice traders in Kano State consist of many accountants and engineers.

Table 3-8 Educational background of employees

(% to total number of employees)

State name/Product name Cluster ID and name	Primary	Secondary	High school	Vocational school	University /college	No education	Not known	Total	Total no. of employees
Total	**27%**	**30%**	**2%**	**0%**	**2%**	**38%**	**1%**	**100%**	**6,025**
Kano State	**26%**	**35%**	**2%**	**0%**	**3%**	**33%**	**2%**	**100%**	**4,130**
1) Rice	**28%**	**31%**	**2%**	**1%**	**2%**	**37%**		**100%**	**1,583**
K1.01 Rice trader	27%	36%	1%	1%	3%	32%		100%	852
K1.02 Rice miller	29%	17%		2%		51%		100%	186
K1.03 Rice parboiler	5%	9%				86%		100%	103
K1.04 Rice trader	36%	32%	4%			28%		100%	441
2) Leather	**30%**	**61%**	**1%**		**1%**	**7%**		**100%**	**885**
K2.01 Leather trader	41%	50%	1%			7%		100%	330
K2.02 Traditional tannery	10%	72%			3%	14%		100%	263
K2.03 Leather products manufacturers	35%	62%			1%	1%		100%	292
3) Groundnut oil	**21%**	**24%**	**2%**		**6%**	**43%**	**4%**	**100%**	**1,662**
K3.01 Groundnut oil traditional processor	11%	6%				83%		100%	178
K3.02 Groundnut oil traditional trader	36%	7%				58%		100%	119
K3.03 Groundnut oil trader	16%	57%				27%		100%	123
K3.04 Groundnut trader	17%	28%	6%		5%	38%	5%	100%	434
K3.05 Groundnut oil mechanical processor	23%	24%	2%		9%	37%	6%	100%	809
Niger State	**29%**	**20%**	**2%**	**1%**	**0%**	**48%**		**100%**	**1,896**
1) Shea product	**20%**	**4%**				**76%**		**100%**	**921**
N1.01 Shea butter traditional processor	18%	4%				78%		100%	690
N1.02 Shea nut traditional processor	26%	4%				70%		100%	231
2) Groundnut oil	**38%**	**35%**	**3%**	**2%**	**0%**	**22%**		**100%**	**721**
N2.01 Groundnut trader	48%	46%	2%			4%		100%	248
N2.02 Groundnut oil trader	33%	40%	3%			23%		100%	145
N2.03 Groundnut oil traditional processor	27%	10%				63%		100%	172
N2.04 Groundnut oil mechanical processor	41%	38%	6%	8%	1%	5%		100%	156
3) Yam	**38%**	**35%**	**5%**			**22%**		**100%**	**254**
N3.01 Yam trader	31%	31%	11%			26%		100%	109
N3.02 Yam flour trader	49%	34%				17%		100%	74
N3.03 Yam wholesaler	38%	41%				21%		100%	72

Source: Project Team

Table 3-9 Age distribution and gender of employees

(% to total number of employees)

State name/Product name Cluster ID and name	Gender	Age class															
		06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	Unknown	Total	Total no. of employees
Total		**4**	**6**	**18**	**17**	**17**	**13**	**10**	**6**	**4**	**1**	**1**	**1**	**0**	**2**	**100**	**6,025**
Male total	**Male**	**1**	**3**	**17**	**18**	**20**	**14**	**12**	**7**	**5**	**2**	**1**	**1**	**0**	**1**	**100**	**4,238**
Female total	**Female**	**14**	**13**	**20**	**14**	**13**	**11**	**5**	**3**	**3**	**0**	**0**	**0**		**3**	**100**	**1,688**
Gender unkown total	**Unknown**			**10**	**24**	**5**		**8**		**10**		**4**			**40**	**100**	**99**
Kano State	**Male**	**1**	**2**	**16**	**16**	**19**	**15**	**13**	**7**	**5**	**2**	**2**	**1**	**0**	**1**	**100**	**3,541**
	Female	**4**	**16**	**18**	**14**	**13**	**12**	**7**	**6**	**6**		**0**			**5**	**100**	**489**
K1 Rice	**Male**	**1**	**1**	**15**	**17**	**22**	**13**	**14**	**8**	**5**	**1**	**1**	**0**		**0**	**100**	**1,351**
	Female	**1**	**5**	**19**	**15**	**16**	**14**	**10**	**8**	**9**		**1**				**100**	**207**
K1.01 Rice trader	Male	1	2	23	26	24	13	6	5	1	1					100	744
	Female			18		24	24	12	6	18						100	84
K1.02 Rice miller	Male			18	15	36	8	15	8							100	177
	Female						50	50								100	9
K1.03 Rice parboiler	Male																
	Female	2	9	19	30	14	5	7	7	5		2				100	103
K1.04 Rice trader	Male			1	4	14	16	27	14	15	3	4	1		1	100	430
	Female			50					50							100	11
K2 Leather	**Male**	**0**	**6**	**23**	**20**	**13**	**13**	**11**	**3**	**5**	**2**	**3**	**1**			**100**	**827**
	Female		**36**	**36**			**18**	**9**								**100**	**43**
K2.01 Leather trader	Male		7	26	21	10	12	12	3	1	1	4	1			100	330
K2.02 Traditional tannery	Male		2	17	14	22	15	11	5	11	2	3				100	248
	Female																
K2.03 Leather products manufacturers	Male	2	10	25	25	10	11	10	2	3	2	2				100	249
	Female		36	36			18	9								100	43
K3 Groundnut oil	**Male**	**1**	**1**	**13**	**12**	**20**	**17**	**15**	**9**	**6**	**2**	**1**	**1**	**0**	**2**	**100**	**1,363**
	Female	**7**	**21**	**14**	**16**	**12**	**9**	**3**	**4**	**3**					**10**	**100**	**239**
K3.01 Groundnut oil traditional processor	Male				15	45	8	16							15	100	31
	Female	3	24	5	21	12	10	5	2	3					16	100	147
K3.02 Groundnut oil traditional trader	Male	33	50	17												100	26
	Female	14	16	28	9	12	9		9	4						100	92
K3.03 Groundnut oil trader	Male			6	12	29	22	2	10	14					4	100	123
	Female																
K3.04 Groundnut trader	Male			4	11	13	21	19	7	8	7	3	4	1	3	100	415
	Female																
K3.05 Groundnut oil mechanical processor	Male		1	20	13	22	15	15	10	4	1					100	769
	Female																
Niger State	**Male**		**7**	**23**	**26**	**21**	**8**	**5**	**5**	**1**	**1**	**1**	**1**	**1**		**100**	**697**
	Female	**18**	**11**	**20**	**14**	**13**	**10**	**5**	**3**	**2**	**0**	**0**	**0**		**3**	**100**	**1,198**
N1 Shea product	**Male**		**31**	**13**	**19**	**19**	**13**	**6**								**100**	**80**
	Female	**23**	**12**	**17**	**15**	**14**	**9**	**4**	**1**	**1**	**1**	**1**			**4**	**100**	**841**
N1.01 Shea butter traditional processor	Male		23	15	15	23	15	8								100	65
	Female	24	11	16	15	15	8	3	1		1	1			5	100	625
N1.02 Shea nut traditional processor	Male		67		33											100	15
	Female	20	14	20	14	9	14	5	2	2						100	216
N2 Groundnut oil	**Male**		**3**	**26**	**29**	**22**	**7**	**4**	**5**	**1**	**2**	**0**	**1**	**1**		**100**	**477**
	Female	**9**	**12**	**24**	**10**	**10**	**12**	**7**	**7**	**7**			**2**			**100**	**244**
N2.01 Groundnut trader	Male		6	17	23	28	11	6	6	2						100	243
	Female									100						100	5

Table 3-9 Age distribution and gender of employees (cont.)

(% to total number of employees)

State name/Product name Cluster ID and name	Gender	Age class													Total	Total no. of employees
		06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	Unknown	
N2.02 Groundnut oil trader	Male			11	58	26			5							100	92
	Female			9	18	45	9	9	9							100	53
N2.03 Groundnut oil traditional processor	Male																
	Female	13	17	27	7		13	7	7	7			3			100	172
N2.04 Groundnut oil mechanical processor	Male			51	18	10	6	1	1		6	1	3	3		100	142
	Female			57	29		14									100	14
N3 Yam	**Male**		**7**	**19**	**21**	**16**	**10**	**9**	**9**	**4**	**1**	**1**	**1**			**100**	**141**
	Female		**6**	**38**	**13**	**16**	**12**	**11**	**4**							**100**	**113**
N3.01 Yam trader	Male		9	13	22	17	17	9	9	4						100	71
	Female		8	58		8	8	17								100	37
N3.02 Yam flour trader	Male		14	29	14			7	21		7	7				100	29
	Female		5	29	24	19	14	10								100	44
N3.03 Yam wholesaler	Male			21	26	26	5	11		5			5			100	40
	Female		7	27	13	20	13	7	13							100	32

Source: Project Team

Table 3-8 indicates the educational background of employees by business type. The percentage of "no education" in female-dominated businesses, such as parboilers and traditional shea butter processors, is high while the literacy rate is extremely low. This table shows a general trend: higher educational background of employees results in higher profits. 6% of groundnuts traders and 9% of mechanical groundnut oil processors are university graduates. As regard to BDS provisions on business management, including bookkeeping, during pilot project implementation, curriculum that specifically considers literacy and mathematics levels of employees should be developed.

Table 3-9 explains employee distribution by age and sex. Recognition of employee distribution by age and sex for business types is essential for the development of policy design involving the education sector and labour market. In traditional business types, the percentage of female employees under the age of 15 is high. Direct correlation is expected between youth labour force and education level. The highest concentrated age class of employees is 26-to-30 class for men and age of 16-to-20 class for women. The peak age class for male employees in Kano State is 5 years younger than the one for male employees in Niger State. Apparently, it seems that engagement of youth generation in business activities is facilitated; however, considering the high unemployment rate, business growth as well as expansion of the employment for the younger generation needs to be accelerated.

Types of employment are indicated in Table 3-10. 22% are employers while 35% are regular employees. Roughly two thirds of the employees are regular employees, including employers. The rate of part-time employees in Kano State is higher than that of Niger State, especially in the groundnut oil value chain due to influence of seasonality on business operations. Similar situation applies to mechanical groundnut oil processors in Niger State, which marks the highest rate of part-time employees among the business types. Considering processing diversification of groundnut oil business in order to minimize the influence of seasonality, policy options that aim to increase the rate of full-time employees should be considered. In fact, at the individual enterprise level, processing diversification is already facilitated among some mechanical groundnut oil processing businesses.

Table 3-10 Employment status

(% to total number of employees)

State name/Product name Cluster ID and name	Owner	Permanent	Temporary	Unknown	Total	Total no. of employees
Total	**22%**	**35%**	**40%**	**3%**	**100%**	**6,025**
Kano State	**22%**	**23%**	**50%**	**5%**	**100%**	**4,130**
1) Rice	**27%**	**29%**	**43%**	**1%**	**100%**	**1,583**
K1.01 Rice trader	23%	32%	45%		100%	852
K1.02 Rice miller	27%	15%	59%		100%	186
K1.03 Rice parboiler	7%	44%	47%	2%	100%	103
K1.04 Rice trader	41%	25%	31%	4%	100%	441
2) Leather	**23%**	**27%**	**45%**	**5%**	**100%**	**885**
K2.01 Leather trader	18%	31%	38%	13%	100%	330
K2.02 Traditional tannery	29%	23%	48%		100%	263
K2.03 Shoe and bag maker	24%	26%	50%		100%	292
3) Groundnut oil	**17%**	**15%**	**59%**	**9%**	**100%**	**1,662**
K3.01 Groundnut oil traditional processor	24%	20%	56%		100%	178
K3.02 Groundnut oil traditional trader	30%	32%	37%		100%	119
K3.03 Groundnut oil trader	37%	33%	31%		100%	123
K3.04 Groundnut trader	18%	14%	59%	8%	100%	434
K3.05 Groundnut oil mechanical processor	11%	9%	67%	13%	100%	809
Niger State	**23%**	**60%**	**17%**		**100%**	**1,896**
1) Shea product	**17%**	**61%**	**22%**		**100%**	**921**
N1.01 Shea butter traditional processor	15%	61%	24%		100%	690
N1.02 Shea nut traditional processor	23%	62%	15%		100%	231
2) Groundnut oil	**28%**	**57%**	**15%**		**100%**	**721**
N2.01 Groundnut trader	25%	65%	10%		100%	248
N2.02 Groundnut oil trader	40%	57%	3%		100%	145
N2.03 Groundnut oil traditional processor	37%	60%	3%		100%	172
N2.04 Groundnut oil mechanical processor	13%	42%	45%		100%	156
3) Yam	**28%**	**63%**	**9%**		**100%**	**254**
N3.01 Yam trader	29%	60%	11%		100%	109
N3.02 Yam flour trader	29%	71%			100%	74
N3.03 Yam wholesaler	26%	59%	15%		100%	72

Source: Project Team

Distribution of monthly employee salary is indicated in Table 3-11. Comparing groundnut oil processors of Kano and Niger States, the average monthly salaries in Kano and Niger States are NGN 13,533 and NGN 5,657, respectively. In general, salary level in Niger State is lower than that in Kano State. Management of traditional business types depends on the employment of family members, especially the youth without pay. Monthly salary of traders in every value chain marks highest: positive correlation is identified between product volume and monthly salary level.

As indicated in the analysis, traders have a high influence on the market in the value chain. In case of government interventions to the processing type of business, effect of government service delivery

would not be maximized without also considering policy measures involving the intervention to traders. As regard to pilot-project implementation, examination of public service delivery to traders as well as observation of traders in the course of service provision to processors is needed with care.

Table 3-11 Salary of employees

(% to total number of employees)

State name/Product name Cluster ID and name	Monthly salary level (Naira)												
	0	1-1,000	1,001-3,000	3,001-7,000	7,001-13,000	13,001-21,000	21,001-31,000	31,001-43,000	43,001-57,000	57,001-以上	Total no. of employees	Total no. of employees	Average monthly salary (Nira)
Total	**3%**	**14%**	**11%**	**14%**	**25%**	**20%**	**7%**	**2%**	**3%**	**1%**	**100%**	**6,025**	**11,055**
Kano State	**2%**	**3%**	**8%**	**13%**	**32%**	**26%**	**9%**	**2%**	**4%**	**1%**	**100%**	**4,130**	**13,533**
1) Rice	**2%**	**1%**	**4%**	**23%**	**33%**	**18%**	**11%**	**2%**	**4%**	**1%**	**100%**	**1,583**	**13,662**
K1.01 Rice trader			2%	28%	34%	17%	9%	2%	8%	1%	100%	852	14,772
K1.02 Rice miller				34%	34%	12%	15%	5%			100%	186	12,890
K1.03 Rice parboiler	9%	7%	53%	12%	7%	2%	7%	2%			100%	103	5,242
K1.04 Rice trader	5%	1%		12%	37%	27%	15%	2%			100%	441	13,814
2) Leather	**1%**	**1%**	**15%**	**9%**	**39%**	**22%**	**8%**	**1%**	**2%**	**2%**	**100%**	**885**	**13,103**
K2.01 Leather trader	1%		16%	9%	38%	18%	9%	1%	1%	6%	100%	330	15,735
K2.02 Traditional tannery				6%	52%	30%	7%		4%		100%	263	13,913
K2.03 Leather products manufacturers		3%	28%	14%	28%	19%	8%				100%	292	9,396
3) Groundnut oil	**4%**	**7%**	**7%**	**6%**	**27%**	**36%**	**7%**	**3%**	**4%**	**1%**	**100%**	**1,662**	**13,640**
K3.01 Groundnut oil traditional processor	13%	30%	47%	1%	6%	3%					100%	178	2,271
K3.02 Groundnut oil traditional trader	19%	43%	21%	6%	3%	9%					100%	119	2,740
K3.03 Groundnut oil trader	2%			4%	47%	29%	6%	10%	2%		100%	123	16,531
K3.04 Groundnut trader	1%	1%		18%	24%	27%	18%	3%	7%		100%	434	17,089
K3.05 Groundnut oil mechanical processor	1%				33%	54%	4%	4%	4%	1%	100%	809	15,443
Niger State	**5%**	**37%**	**20%**	**16%**	**9%**	**6%**	**3%**	**1%**	**1%**	**1%**	**100%**	**1,896**	**5,657**
1) Shea product	**3%**	**61%**	**28%**	**8%**	**1%**						**100%**	**921**	**1,363**
N1.01 Shea butter traditional processor	3%	57%	31%	9%	1%						100%	690	1,484
N1.02 Shea nut traditional processor	4%	74%	17%	4%							100%	231	1,003
2) Groundnut oil	**5%**	**20%**	**12%**	**24%**	**19%**	**11%**	**4%**	**2%**	**1%**	**1%**	**100%**	**721**	**8,328**
N2.01 Groundnut trader	4%		2%	33%	35%	13%	6%	2%		4%	100%	248	12,267
N2.02 Groundnut oil trader	20%	23%	30%	27%							100%	145	1,967
N2.03 Groundnut oil traditional processor		63%	20%	10%	3%	3%					100%	172	2,231
N2.04 Groundnut oil mechanical processor				24%	28%	28%	10%	5%	4%		100%	156	14,694
3) Yam	**12%**	**2%**	**14%**	**24%**	**15%**	**14%**	**8%**	**5%**	**3%**	**3%**	**100%**	**254**	**13,655**
N3.01 Yam trader	11%		20%	9%	17%	20%	11%	6%	3%	3%	100%	109	14,071
N3.02 Yam flour trader	9%	3%	11%	46%	20%	11%					100%	74	6,514
N3.03 Yam wholesaler	18%	3%	9%	24%	6%	9%	12%	9%	6%	6%	100%	72	20,338

Source: Project Team

As regard to monthly salary levels categorized by business type, NGN 20,338 for yam traders in Niger State is ranked first, followed by NGN 17,089 for groundnuts traders, NGN 16,531 for groundnut oil traders, and NGN 15735 for leather/hides and skins traders in Kano State. On the other hand, NGN 1,003 for traditional shea nuts processors, NGN 1,484 for traditional shea butter processors, NGN 1,967 for groundnut oil traders in Niger States, and NGN 2,271 for traditional groundnut oil processors in Kano State are ranked as low monthly salary business types.

Table 3-12 Accounting method of enterprises

(% to total number of enterprises)

State name/Product name Cluster ID and name	Accounting method						
	Double entry bookkeeping	Cash book method	Estimation	No management	Not known	Total	No. of enterprises
Total	**1%**	**14%**	**62%**	**22%**	**1%**	**100%**	**1,404**
Kano State	**1%**	**15%**	**65%**	**17%**	**1%**	**100%**	**951**
1) Rice	**1%**	**11%**	**72%**	**14%**	**2%**	**100%**	**461**
K1.01 Rice trader	2%	7%	80%	7%	2%	100%	202
K1.02 Rice miller		18%	82%			100%	50
K1.03 Rice parboiler				90%	10%	100%	24
K1.04 Rice trader		15%	71%	15%		100%	185
2) Leather		**20%**	**75%**	**4%**	**2%**	**100%**	**204**
K2.01 Leather trader		36%	64%			100%	68
K2.02 Traditional tannery		6%	88%	6%		100%	61
K2.03 Leather products manufacturers		16%	74%	5%	5%	100%	75
3) Groundnut oil	**2%**	**18%**	**47%**	**33%**	**1%**	**100%**	**286**
K3.01 Groundnut oil traditional processor				100%		100%	43
K3.02 Groundnut oil traditional trader		12%		88%		100%	36
K3.03 Groundnut oil trader		17%	44%	33%	6%	100%	45
K3.04 Groundnut trader		18%	77%	6%		100%	82
K3.05 Groundnut oil mechanical processor	6%	30%	64%			100%	80
Niger State	**2%**	**12%**	**54%**	**32%**		**100%**	**453**
1) Shea product		**3%**	**53%**	**44%**		**100%**	**179**
N1.01 Shea butter traditional processor		4%	54%	42%		100%	120
N1.02 Shea nut traditional processor			50%	50%		100%	59
2) Groundnut oil	**5%**	**21%**	**53%**	**21%**		**100%**	**203**
N2.01 Groundnut trader	8%	25%	58%	8%		100%	62
N2.02 Groundnut oil trader			83%	17%		100%	58
N2.03 Groundnut oil traditional processor		18%	36%	45%		100%	63
N2.04 Groundnut oil mechanical processor	20%	80%				100%	20
3) Yam		**9%**	**63%**	**28%**		**100%**	**71**
N3.01 Yam trader			90%	10%		100%	31
N3.02 Yam flour trader		20%	40%	40%		100%	21
N3.03 Yam wholesaler		11%	44%	44%		100%	19

Source: Project Team

3.2.5 Enterprise management and financial services

Table 3-12, Table 3-13 indicate means of management and access to finance. Only 15% of enterprises apply double-entry bookkeeping or receipt journal for business management. This percentage is high in the leather value chain of Kano State and the groundnut oil value chain of Niger State. As regard to loans from banks, 1% comes from commercial banks while 3% comes from microfinance banks. Frequent loans from banks are found in the value chain of groundnut oil in Niger State where the

percentage of bookkeeping practice is high. Positive correlation is found between the degree of bookkeeping practices and the rate of loans.

Only a limited number of enterprises has access to loans while none of them have loans from government banks. This explains the important role of BDS, which bridges enterprises not only with private financial banks but also with government financial institutions.

Table 3-13 Bank loans

(% to total number of enterprises)

State name/Product name Cluster ID and name	Commercial bank	Micro-financing banks/institutions	Specialised public banks	Other	N.A.	Total	No. of enterprises
Total	**1%**	**3%**			**96%**	**100%**	**1,404**
Kano State		**3%**			**97%**	**100%**	**951**
1) Rice		**4%**			**96%**	**100%**	**461**
K1.01 Rice trader		2%			98%	100%	202
K1.02 Rice miller					100%	100%	50
K1.03 Rice parboiler		50%			50%	100%	24
K1.04 Rice trader					100%	100%	185
2) Leather					**100%**	**100%**	**204**
K2.01 Leather trader					100%	100%	68
K2.02 Traditional tannery					100%	100%	61
K2.03 Leather products manufacturer					100%	100%	75
3) Groundnut oil		**4%**			**96%**	**100%**	**286**
K3.01 Groundnut oil traditional processor					100%	100%	43
K3.02 Groundnut oil traditional trader		29%			71%	100%	36
K3.03 Groundnut oil trader					100%	100%	45
K3.04 Groundnut trader					100%	100%	82
K3.05 Groundnut oil mechanical processor					100%	100%	80
Niger State	**4%**	**3%**			**93%**	**100%**	**453**
1) Shea product	**3%**	**3%**			**94%**	**100%**	**179**
N1.01 Shea butter traditional processor		4%			96%	100%	120
N1.02 Shea nut traditional processor	8%				92%	100%	59
2) Groundnut oil	**4%**	**5%**			**91%**	**100%**	**203**
N2.01 Groundnut trader					100%	100%	62
N2.02 Groundnut oil trader	8%	17%			75%	100%	58
N2.03 Groundnut oil traditional processor					100%	100%	63
N2.04 Groundnut oil mechanical processor	20%				80%	100%	20
3) Yam	**3%**				**97%**	**100%**	**71**
N3.01 Yam trader					100%	100%	31
N3.02 Yam flour trader					100%	100%	21
N3.03 Yam wholesaler	11%				89%	100%	19

Source: Project Team

As indicated above, financial services are provided only to a limited number of enterprises. Let us look at the demands of enterprises against finance. Table 3-14 shows the demands for access to finance and the reasons for rejection of loans from banks. 70% of enterprises wish to gain access to loans, 16% of enterprises were rejected during the loan-application process, and more than 47% of enterprises cannot identify loan services. Examining the situation from the bank side, several reasons for rejection of investments to enterprises are identified: low priority level to MSMEs for bank loans, weak financial verifications, and high risk of lending to MSMEs. BDS in the areas of basic bookkeeping, business-plan development, and enhancement of business management should be provided to enterprises in order to facilitate access to loans, thus aiming for business stability and expansion.

Table 3-14 Needs for loans and reasons for not being able to obtain loans

(% to total number of enterprises)

State name/Product name Cluster ID and name	Do you want to obtain loans from bank?				Reasons for not able to obtain bank loans					
	Yes	No	Not known	Total	Rejected by bank	No loan service	Other	Not known	Total	No. of enterprises
Total	**70%**	**25%**	**6%**	**100%**	**16%**	**47%**	**29%**	**9%**	**100%**	**1,404**
Kano State	**65%**	**27%**	**8%**	**100%**	**8%**	**57%**	**26%**	**9%**	**100%**	**951**
1) Rice	**66%**	**28%**	**6%**	**100%**	**9%**	**51%**	**31%**	**8%**	**100%**	**461**
K1.01 Rice trader	63%	32%	5%	100%	17%	32%	46%	5%	100%	202
K1.02 Rice miller	73%	27%		100%	18%	82%			100%	50
K1.03 Rice parboiler	60%	10%	30%	100%			50%	50%	100%	24
K1.04 Rice trader	68%	26%	6%	100%		71%	21%	9%	100%	185
2) Leather	**58%**	**40%**	**2%**	**100%**	**12%**	**61%**	**27%**		**100%**	**204**
K2.01 Leather trader	64%	29%	7%	100%	7%	57%	36%		100%	68
K2.02 Traditional tannery	56%	44%		100%	13%	63%	25%		100%	61
K2.03 Leather products manufacturers	53%	47%		100%	16%	63%	21%		100%	75
3) Groundnut oil	**70%**	**16%**	**14%**	**100%**	**2%**	**65%**	**15%**	**18%**	**100%**	**286**
K3.01 Groundnut oil traditional processor	46%	33%	21%	100%		62%	11%	27%	100%	43
K3.02 Groundnut oil traditional trader	22%	37%	41%	100%		59%		41%	100%	36
K3.03 Groundnut oil trader	83%	11%	6%	100%		39%	50%	11%	100%	45
K3.04 Groundnut trader	88%	6%	6%	100%	6%	62%	20%	12%	100%	82
K3.05 Groundnut oil mechanical processor	78%	10%	13%	100%		88%		13%	100%	80
Niger State	**78%**	**20%**	**1%**	**100%**	**32%**	**24%**	**36%**	**8%**	**100%**	**453**
1) Shea product	**83%**	**17%**		**100%**	**22%**	**31%**	**33%**	**14%**	**100%**	**179**
N1.01 Shea butter traditional processor	88%	13%		100%	33%	29%	25%	13%	100%	120
N1.02 Shea nut traditional processor	75%	25%		100%		33%	50%	17%	100%	59
2) Groundnut oil	**67%**	**31%**	**3%**	**100%**	**37%**	**16%**	**43%**	**4%**	**100%**	**203**
N2.01 Groundnut trader	83%	17%		100%	42%	17%	42%		100%	62
N2.02 Groundnut oil trader	50%	50%		100%	83%		8%	8%	100%	58
N2.03 Groundnut oil traditional processor	55%	36%	9%	100%		36%	64%		100%	63
N2.04 Groundnut oil mechanical processor	100%			100%			80%	20%	100%	20
3) Yam	**100%**			**100%**	**46%**	**26%**	**22%**	**6%**	**100%**	**71**
N3.01 Yam trader	100%			100%	50%	40%	10%		100%	31
N3.02 Yam flour trader	100%			100%	50%	20%	20%	10%	100%	21
N3.03 Yam wholesaler	100%			100%	33%	11%	44%	11%	100%	19

Source: Project Team

Based on the data indicated above, it is explained that the demands for finance are high while loans from formal sectors are limited. This gap between supply and demand is compensated by loans that existed in the informal sector. Table 3-15 shows the supply of informal loans. 45% of enterprises receive capital from family members, relatives, friends, and usurers. The amount of loans from informal sector is relatively smaller than that from formal sector, which explains the wide gap between supply and demand of financial service provisions. It is reasonable to say that through BDS provisions to high-potential enterprises, the possibility of expanded loans and investments is promised.

Table 3-15 Sources of informal loans

(% to total number of enterprises)

State name/Product name Cluster ID and name	Immediate family	Relatives	Friends	Money render	Other	N.A.	Total	No. of enterprises
Total	**26%**	**4%**	**15%**	**0%**	**1%**	**54%**	**100%**	**1,404**
Kano State	**17%**	**3%**	**20%**		**2%**	**59%**	**100%**	**951**
1) Rice	**17%**	**4%**	**8%**		**2%**	**69%**	**100%**	**461**
K1.01 Rice trader	32%		12%		5%	51%	100%	202
K1.02 Rice miller	9%	9%	18%			64%	100%	50
K1.03 Rice parboiler	10%	10%				80%	100%	24
K1.04 Rice trader	3%	6%	3%			88%	100%	185
2) Leather	**28%**	**4%**	**42%**		**4%**	**22%**	**100%**	**204**
K2.01 Leather trader	21%		57%		7%	14%	100%	68
K2.02 Traditional tannery	31%		50%		6%	13%	100%	61
K2.03 Leather products manufacturers	32%	11%	21%			37%	100%	75
3) Groundnut oil	**9%**		**22%**			**69%**	**100%**	**286**
K3.01 Groundnut oil traditional processor	35%					65%	100%	43
K3.02 Groundnut oil traditional trader	19%					81%	100%	36
K3.03 Groundnut oil trader	11%					89%	100%	45
K3.04 Groundnut trader			71%			29%	100%	82
K3.05 Groundnut oil mechanical processor			6%			94%	100%	80
Niger State	**44%**	**7%**	**5%**	**1%**		**43%**	**100%**	**453**
1) Shea product	**44%**	**3%**	**3%**	**3%**		**47%**	**100%**	**179**
N1.01 Shea butter traditional processor	46%		4%	4%		46%	100%	120
N1.02 Shea nut traditional processor	42%	8%				50%	100%	59
2) Groundnut oil	**48%**	**7%**	**3%**			**43%**	**100%**	**203**
N2.01 Groundnut trader	50%	8%	8%			33%	100%	62
N2.02 Groundnut oil trader	83%	17%					100%	58
N2.03 Groundnut oil traditional processor	27%					73%	100%	63
N2.04 Groundnut oil mechanical processor						100%	100%	20
3) Yam	**34%**	**16%**	**15%**			**35%**	**100%**	**71**
N3.01 Yam trader	30%	10%	20%			40%	100%	31
N3.02 Yam flour trader	30%	20%	10%			40%	100%	21
N3.03 Yam wholesaler	44%	22%	11%			22%	100%	19

Source: Project Team

3.2.6 Supply and Demand of BDS

Table 3-16 indicates the demands for BDS provisions. High percentage of demands is noted for capital assistance through provision of subsidies (64%) and technical assistance (27%), which are provided by government-related agencies without compensation. As regard to technical assistance identified according to value chain, demands for shea products (53%), groundnut oil (42%), and yam (41%) are high. Leather-related enterprises in Kano State marked the highest percentage of demands for financial assistance.

Table 3-16 Demand for BDS

(% to total number of enterprises)

State name/Product name Cluster ID and name	Free BDS requested							BDS requested at cost							No. of enterprises
	Technical support	Financial support	Advisory support	Facilitative support	Other support	Not known	Total	Technical support	Financial support	Advisory support	Facilitative support	Other support	Not known	Total	
Total	**27**	**64**	**6**	**1**	**0**	**0**	**100**	**16**	**32**	**31**	**18**	**1**	**2**	**100**	**1,404**
Kano State	**19**	**71**	**8**	**2**		**1**	**100**	**19**	**43**	**20**	**15**		**2**	**100**	**951**
1) Rice	**19**	**67**	**12**	**1**		**1**	**100**	**29**	**25**	**25**	**21**		**1**	**100**	**461**
K1.01 Rice trader	24	71	5				100	32	24	22	22			100	202
K1.02 Rice miller	9	91					100	18	36	18	27			100	50
K1.03 Rice parboiler		100					100		100					100	24
K1.04 Rice trader	18	53	24	3		3	100	32	12	32	21		3	100	185
2) Leather	**16**	**84**					**100**	**8**	**69**	**15**	**4**		**5**	**100**	**204**
K2.01 Leather trader	14	86					100		64	21			14	100	68
K2.02 Traditional tannery	6	94					100	13	81	6				100	61
K2.03 Leather products manufacturers	26	74					100	11	63	16	11			100	75
3) Groundnut oil	**20**	**69**	**8**	**3**			**100**	**11**	**56**	**18**	**14**		**2**	**100**	**286**
K3.01 Groundnut oil traditional processor	38	51	11				100	21	47	21	11			100	43
K3.02 Groundnut oil traditional trader	37	63					100		39	49	12			100	36
K3.03 Groundnut oil trader	22	56	11	11			100	22	50	22	6			100	45
K3.04 Groundnut trader	12	82	6				100	6	71	12	12			100	82
K3.05 Groundnut oil mechanical processor	10	75	10	5			100	10	56	5	23		6	100	80
Niger State	**46**	**50**	**2**	**1**	**1**		**100**	**10**	**9**	**53**	**24**	**2**	**3**	**100**	**453**
1) Shea product	**53**	**39**	**3**	**3**	**3**		**100**	**6**	**6**	**58**	**22**	**3**	**6**	**100**	**179**
N1.01 Shea butter traditional processor	58	33	4	4			100	4	4	63	21		8	100	120
N1.02 Shea nut traditional processor	42	50			8		100	8	8	50	25	8		100	59
2) Groundnut oil	**42**	**58**					**100**	**14**	**6**	**52**	**28**			**100**	**203**
N2.01 Groundnut trader	50	50					100	8		83	8			100	62
N2.02 Groundnut oil trader	58	42					100			50	50			100	58
N2.03 Groundnut oil traditional processor	18	82					100	36	18	18	27			100	63
N2.04 Groundnut oil mechanical processor	40	60					100			70	30			100	20
3) Yam	**41**	**54**	**4**				**100**	**10**	**28**	**43**	**13**	**3**	**3**	**100**	**71**
N3.01 Yam trader	40	50	10				100	10	30	50	10			100	31
N3.02 Yam flour trader	30	70					100	10	20	40	20		10	100	21
N3.03 Yam wholesaler	56	44					100	11	33	33	11	11		100	19

Source: Project Team

As regard to demands of compensation types of BDS provisions by both public and private institutions, capital assistance (32%), management consulting services (31%), and provisions of facilitation to finance (18%) are in relatively high need. To fully utilize the available services, target enterprises must have basic management knowledge. Highest demands for provisions of facilitation to finance are 58% of shea products in Niger State, followed by 52% of groundnut oil products in Niger State. Demands for funds by loan are high for leather- (69%) and groundnut oil- (56%) related enterprises.

Table 3-17 Recognition of BDS providers

(% to total number of enterprises)

State name/Product name / Cluster ID and name	Do you know SMEDAN's BDS?					Do you know State Government's BDS?					Do you know NGO's BDS?					Do you know private sector's BDS?					
	Yes					Yes					Yes					Yes					
	Total	Obtained BDS	No	Not known	Total	Total	Obtained BDS	No	Not known	Total	Total	Obtained BDS	No	Not known	Total	Total	Obtained BDS	No	Not known	Total	No. of enterprises
Average for all clusters	**16**	**9**	**81**	**3**	**100**	**37**	**7**	**61**	**1**	**100**	**21**	**4**	**76**	**3**	**100**	**12**	**2**	**86**	**2**	**100**	**1,404**
Kano State	**18**	**10**	**78**	**4**	**100**	**43**	**4**	**55**	**2**	**100**	**28**	**4**	**69**	**3**	**100**	**16**	**3**	**81**	**3**	**100**	**951**
1) Rice	**32**	**20**	**61**	**7**	**100**	**65**	**7**	**34**	**1**	**100**	**44**	**6**	**51**	**6**	**100**	**28**	**3**	**68**	**3**	**100**	**461**
K1.01 Rice trader	7		85	7	100	68	2	32		100	41	7	54	5	100	41	5	59		100	202
K1.02 Rice miller	18	9	73	9	100	64	9	36		100	27		73		100	27	9	73		100	50
K1.03 Rice parboiler			100		100			100		100			80	20	100			80	20	100	24
K1.04 Rice trader	68	47	26	6	100	71	12	26	3	100	56	6	38	6	100	18		76	6	100	185
2) Leather			**95**	**5**	**100**	**18**		**80**	**2**	**100**	**8**	**2**	**90**	**2**	**100**	**4**		**92**	**4**	**100**	**204**
K2.01 Leather trader			86	14	100	14		79	7	100	7		86	7	100			100		100	68
K2.02 Traditional tannery			100		100	19		81		100	13	6	88		100			100		100	61
K2.03 Leather products manufacturers			100		100	21		79		100	5		95		100	11		79	11	100	75
3) Groundnut oil	**7**	**2**	**93**	**1**	**100**	**26**	**1**	**71**	**3**	**100**	**16**	**3**	**84**		**100**	**6**	**4**	**92**	**2**	**100**	**286**
K3.01 Groundnut oil traditional processor			94	6	100		6	100		100		6	100		100	6	6	94		100	43
K3.02 Groundnut oil traditional trader			100		100	37		51	12	100			100		100			100		100	36
K3.03 Groundnut oil trader			100		100	50		39	11	100	72		28		100	22	22	67	11	100	45
K3.04 Groundnut trader	12		88		100	18		82		100	6		94		100	6		94		100	82
K3.05 Groundnut oil mechanical processor	11	6	89		100	29		71		100	11	6	89		100			100		100	80
Niger State	**14**	**6**	**86**		**100**	**25**	**13**	**75**		**100**	**7**	**3**	**91**	**2**	**100**	**3**		**97**		**100**	**453**
1) Shea product	**22**	**11**	**78**		**100**	**31**	**22**	**69**		**100**	**11**		**86**	**3**	**100**	**6**		**94**		**100**	**179**
N1.01 Shea butter traditional processor	25	13	75		100	29	21	71		100	8		92		100	4		96		100	120
N1.02 Shea nut traditional processor	17	8	83		100	33	25	67		100	17		75	8	100	8		92		100	59
2) Groundnut oil	**8**	**2**	**92**		**100**	**16**	**5**	**84**		**100**	**5**	**7**	**92**	**3**	**100**			**100**		**100**	**203**
N2.01 Groundnut trader			100		100	17	17	83		100		8	100		100			100		100	62
N2.02 Groundnut oil trader	8	8	92		100			100		100	17	17	83		100			100		100	58
N2.03 Groundnut oil traditional processor	18		82		100	36		64		100			91	9	100			100		100	63
N2.04 Groundnut oil mechanical processor			100		100			100		100			100		100			100		100	20
3) Yam	**9**	**3**	**91**		**100**	**34**	**12**	**66**		**100**	**3**		**97**		**100**	**6**		**94**		**100**	**71**
N3.01 Yam trader			100		100	30	20	70		100			100		100			100		100	31
N3.02 Yam flour trader	20		80		100	40		60		100	10		90		100	20		80		100	21
N3.03 Yam wholesaler	11	11	89		100	33	11	67		100			100		100			100		100	19

Source: Project Team

Next, let us look at the status of service provisions against high BDS demands. Table 3-17 indicates the level of recognition by enterprises for BDS providers. Level of recognition for each BDSP is not high: recognition of SMEDAN by enterprises is 16%. Recognitions of BDS provided by state

government, NGO, and private sector are 37%, 21%, and 12%, respectively, which are not extremely low. Percentage of enterprise with experiences in receiving BDS service provisions is low. Enterprises that receive service provisions from SMEDAN are 9%, followed by 7% from state government, 4% from NGO, and 2% from private companies. The analysis shows the strong need for organization and enhancement of institutionalized BSS provisions.

Table 3-18 Average asset and liabilities by an enterprise

State name Product name Type of business and ID	Change in value of asset (Thousand Nira)				Change in value of liabilities (Thousand Nira)				Number of enter-prises
	June '09 a	May '10 b	Change c=b-a	Change %=c/a	June '09 a	May '10 b	Change c=b-a	Change %=c/a	
Total	**1,923**	**3,696**	**1,773**	**92%**	**67.9**	**56.5**	**-11.4**	**-17%**	**1,404**
Kano State	**1,583**	**3,564**	**1,981**	**125%**	**75.5**	**59.6**	**-15.9**	**-21%**	**951**
1) Rice	**1,503**	**1,644**	**141**	**9%**	**83.9**	**45.0**	**-38.9**	**-46%**	**461**
K1.01 Rice trader	1,834	1,631	-203	-11%	161.1	72.4	-88.6	-55%	202
K1.02 Rice miller	214	235	21	10%					50
K1.03 Rice parboiler	58	424	366	627%	16.4	12.3	-4.1	-25%	24
K1.04 Rice trader	1,676	2,197	521	31%	31.2	31.4	0.2	1%	185
2) Leather	**1,476**	**2,814**	**1,338**	**91%**	**5.6**	**5.6**			**204**
K2.01 Leather trader	2,607	5,333	2,726	105%	16.5	16.5			68
K2.02 Traditional tannery	1,762	2,726	965	55%	0.4	0.4			61
K2.03 Leather products manufacturers	218	602	384	176%					75
3) Groundnut oil	**1,788**	**7,192**	**5,404**	**302%**	**111.8**	**121.6**	**9.8**	**9%**	**286**
K3.01 Groundnut oil traditional processor	52	78	26	50%	11.4	10.4	-1.0	-9%	43
K3.02 Groundnut oil traditional trader	41	47	6	15%	11.0	11.5	0.5	5%	36
K3.03 Groundnut oil trader	5,123	8,459	3,336	65%	387.1	449.8	62.8	16%	45
K3.04 Groundnut trader	1,877	13,259	11,382	606%	159.7	159.7			82
K3.05 Groundnut oil mechanical processor	1,541	7,301	5,760	374%	7.2	7.4	0.2	3%	80
Niger State	**2,636**	**3,973**	**1,337**	**51%**	**51.9**	**50.0**	**-1.9**	**-4%**	**453**
1) Shea product	**83**	**134**	**52**	**62%**	**10.9**	**8.1**	**-2.8**	**-26%**	**179**
N1.01 Shea butter traditional processor	88	156	67	76%	13.1	9.1	-4.0	-31%	120
N1.02 Shea nut traditional processor	71	91	20	28%	6.4	6.1	-0.3	-5%	59
2) Groundnut oil	**4,215**	**5,976**	**1,761**	**42%**	**78.2**	**78.9**	**0.7**	**1%**	**203**
N2.01 Groundnut trader	2,087	6,054	3,967	190%	164.2	165.1	0.8	1%	62
N2.02 Groundnut oil trader	437	548	111	25%	46.1	47.7	1.5	3%	58
N2.03 Groundnut oil traditional processor	2,920	598	-2,322	-80%	4.5	4.5			63
N2.04 Groundnut oil mechanical processor	25,848	38,419	12,571	49%	136.9	136.9			20
3) Yam	**4,559**	**7,925**	**3,366**	**74%**	**80.1**	**72.8**	**-7.3**	**-9%**	**71**
N3.01 Yam trader	4,220	9,288	5,068	120%	77.3	61.8	-15.5	-20%	31
N3.02 Yam flour trader	838	1,575	737	88%	62.7	61.2	-1.5	-2%	21
N3.03 Yam wholesaler	9,224	12,718	3,494	38%	103.8	103.5	-0.3	0%	19

Source: Project Team

3.2.7 Property and debt

Average property and debt figures, with details of property and debt according to business types, are described in Table 3-18, Table 3-19, and Table 3-20. Property, debt, and capital figures indicated in the tables do not satisfy the principles of capital equation. Reason for this could be, based on surveys

given to enterprises, the lack of recognized capital resulting from insufficient bookkeeping practices for business management. Therefore, it is understood that results indicated in the tables explain the status of property possession and debt of loans from the banks of the enterprises.

Table 3-19 Details of average asset values by enterprise

State name/Product name Type of business and ID	% of each asset item values to the total asset value by business type as of May 2010																		Number of enterprises
	Cash	Bank deposit	Accounts receivable - net	Inventory	Supplies	Prepaid Insurance	Investments	Land	Land improvements	Buildings	Equipment	Trucks	Cars	Motorcycles	Bicycles/carts	Accumulated depreciation	Other items	Total	Total (Thousand Naira)	
Total	**29**	**16**	**7**	**12**	**6**	**0**	**3**	**10**	**0**	**12**	**3**	**1**	**1**	**1**	**0**	**0**	**0**	**100**	**3,696**	**1,404**
Kano State	**30**	**20**	**12**	**12**	**7**		**0**	**5**	**1**	**6**	**3**	**2**	**1**	**1**	**0**	**0**	**0**	**100**	**3,564**	**951**
1) Rice	**19**	**7**	**3**	**17**	**12**		**2**	**9**	**2**	**21**	**5**	**2**	**1**	**1**	**0**	**0**		**100**	**1,644**	**461**
K1.01 Rice trader	25	11	5	16	2		3	4	1	22	4	4	1	1	0			100	1,631	202
K1.02 Rice miller	51	0	0	1					8		36			3		0		100	235	50
K1.03 Rice parboiler	93		4	2	0			2				0						100	424	24
K1.04 Rice trader	11	4	1	18	21		2	12	2	22	4	0	1	2	0			100	2,197	185
2) Leather	**54**	**13**	**7**	**21**	**1**						**0**	**0**	**4**	**0**	**0**			**100**	**2,814**	**204**
K2.01 Leather trader	42	20	3	29	1						0	1	3	0	0			100	5,333	68
K2.02 Traditional tannery	75	0	12	6									6	0				100	2,726	61
K2.03 Leather products manufacturers	70	0	16	10										4				100	602	75
3) Groundnut oil	**28**	**27**	**16**	**8**	**7**			**4**	**1**	**3**	**3**	**2**	**0**	**1**			**0**	**100**	**7,192**	**286**
K3.01 Groundnut oil traditional processor	73		5	4	17						0	0						100	78	43
K3.02 Groundnut oil traditional trader	47		11	21	21						1							100	47	36
K3.03 Groundnut oil trader	10	1	0	33	27			12	3	5	2			6				100	8,459	45
K3.04 Groundnut trader	11	51	30	1	3			2		2			0	0				100	13,259	82
K3.05 Groundnut oil mechanical processor	70	0	0	5	0			3		3	9	9		0			0	100	7,301	80
Niger State	**26**	**9**	**0**	**13**	**4**	**0**	**6**	**18**	**0**	**20**	**2**	**0**	**1**	**0**	**0**			**100**	**3,973**	**453**
1) Shea product	**16**	**1**	**2**	**31**	**0**	**0**	**6**	**10**	**2**	**28**	**2**							**100**	**134**	**179**
N1.01 Shea butter traditional processor	17	1	3	37	1	1	6	13	3	18	2							100	156	120
N1.02 Shea nut traditional processor	14	2	1	9			6			64	4							100	91	59
2) Groundnut oil	**30**	**9**	**0**	**15**	**3**		**5**	**14**	**0**	**22**	**1**	**0**	**1**	**0**	**0**			**100**	**5,976**	**203**
N2.01 Groundnut trader	9	7	0	40	2		3	2		36	1	0	0	1				100	6,054	62
N2.02 Groundnut oil trader	26	4		0			5	33	7	15	1	0	3	4	1			100	548	58
N2.03 Groundnut oil traditional processor	3		1	94	1						1	0						100	598	63
N2.04 Groundnut oil mechanical processor	38	10		4	3		6	18		19	1		1	0				100	38,419	20
3) Yam	**18**	**12**		**7**	**6**	**0**	**8**	**28**	**0**	**14**	**4**		**2**	**1**				**100**	**7,925**	**71**
N3.01 Yam trader	17	9		5	9		8	39	0	12			2	0				100	9,288	31
N3.02 Yam flour trader	17	10		30		0	4	12	1	19			3	3				100	1,575	21
N3.03 Yam wholesaler	20	16		5	5		9	17	0	16	9		2	0				100	12,718	19

Source: Project Team

Table 3-18 shows the property and debt types that are possessed by enterprises. Properties of mechanical groundnut oil processors in Niger State are relatively larger than those of other enterprises. The reason for this fact is their possession of high value of land, buildings, and cash in hand. Yam

traders and mechanical groundnut oil processors generally possess properties with values ranging from NGN 1,500,000 to NGN 9,000,000. These business types require large amounts of capital for trading and investments in infrastructure. At the same time, those who possess larger properties tend to have larger debts than the other enterprises, which indicates high demands for capital investments. According to an annual trend from June 2009 to May 2010 that was identified through survey results, enterprises recognize capital growth without increased debt. Against the average amount of capital, the average amount of debt is comparably small.

As shown in Table 3-19 cash in hand, savings, accounts receivable, inventory, land, and buildings are considered as asset details. Size of assets owned by millers, parboilers, leather manufacturers, traditional shea butter processors, and traditional groundnut oil processors is small, ranging from NGN 50,000 to NGN 600,000. Size of assets owned by traditional business types is extremely small, which have characteristics similar to that of cottage industry processing. As regard to assets of traditional processing business, cash in hand, land, building and processing equipment are identified.

As for the assets of target enterprises in the survey, highest assets on average are listed in order as cash in hand, savings, inventory, building, land, and account receivable. Cash in hand applies to 24% of the total asset, which explains its major means for business transactions. The percentage of cash as an asset becomes higher for enterprises with smaller properties. On average, 8% of assets owned by target enterprises in survey is account receivable. Large amounts of account receivable are identified in leather-, groundnut-, and groundnut oil-related businesses in Kano State, which suggests that deals on credit is widely accepted as a general business style.

Table 3-20 shows the details of debt and capital. The amount of capital can be ignored, for reasons already mentioned. According to figures indicated in the table, 49% of the debt is accounts payable, 22% is loan or acceptance payable, and 22% is unpaid salaries. Business types with large amounts of debts are rice-related business, leather-related business, and groundnut oil-related business in Kano States. Business types with large assets are yam traders and mechanical groundnut oil processors in Niger State. The difference in debt details between Kano and Niger States is noted through analysis of the figures. Looking at the groundnut oil-related business of both states, details of debt in Kano State are primarily acceptance payable while those in Niger State are loan from banks. This difference is applicable to other products targeted in the two states. This explains that capital is lended based on business relationships with traders in Kano State while financial institutions possess power to lend money in Niger State.

3.2.8 Market seasonality

Table 3-21 indicates monthly trends for sales price per unit of product and sales amount per enterprise. Based on figures indicated in the table, market seasonality of each business type is analysed.

(1) Rice in Kano State

Examining the monthly sales price and sales amount of rice traders, millers and parboilers, extreme seasonality is not found in the rice value chain in Kano State. The trading price of rice increases from July to August and then decreases slightly after post-harvest season in October. The sales price for traders and parboilers in Kura, one of the major rice-production areas in Kano State, increases after post-harvest period. On the other hand, sales price for millers is stable throughout the year. The sales price for traders located in Nasarawa Local Government Area (LGA), which is close to major markets in the city, increases during both pre-and post- harvest periods of August and September and then decreases after post-harvest period in January.

The analysis of figures explains that the rice market is not influenced by high seasonality, but is supported by minimal price changes as well as a stable supply and demand balance in the market throughout the year.

Table 3-20 Details of average liability and equity values by enterprise

State name/Product name Type of business and ID	% of each liability item values to the total liability value by business type as of May 2010												Number of enterprises
	Liabilities							Equity					
	Accounts payable	Wages payable	Interest payable	Taxes payable	Warranty liability	Unearned revenues	Bonds payable	Common stock	Retained earnings	Other items	Total	Total (Thousand Naira)	
Total	**22**	**49**	**22**	**1**	**2**	**0**	**4**			**1**	**100**	**56**	**1,404**
Kano State	**6**	**69**	**18**	**0**	**1**		**5**			**1**	**100**	**60**	**951**
1) Rice	**13**	**39**	**40**	**0**	**2**		**4**			**3**	**100**	**45**	**461**
K1.01 Rice trader	11	43	39	0	2		1			4	100	72	202
K1.02 Rice miller													50
K1.03 Rice parboiler	98		2								100	12	24
K1.04 Rice trader	15	28	44		0		12				100	31	185
2) Leather	**8**	**85**			**7**						**100**	**6**	**204**
K2.01 Leather trader	9	87			5						100	17	68
K2.02 Traditional tannery					100						100	0	61
K2.03 Leather products manufacturers													75
3) Groundnut oil	**2**	**86**	**5**	**0**	**0**		**7**			**0**	**100**	**122**	**286**
K3.01 Groundnut oil traditional processor	48	30	19	1			1			1	100	10	43
K3.02 Groundnut oil traditional trader	37	32	27				4				100	11	36
K3.03 Groundnut oil trader		95	3	0	0		2				100	450	45
K3.04 Groundnut trader		79	7		0		13				100	160	82
K3.05 Groundnut oil mechanical processor	54	9	20				16				100	7	80
Niger State	**61**	**1**	**31**	**2**	**5**	**0**					**100**	**50**	**453**
1) Shea product	**58**		**38**	**1**	**3**						**100**	**8**	**179**
N1.01 Shea butter traditional processor	58		38	1	3						100	9	120
N1.02 Shea nut traditional processor	60		38	0	1						100	6	59
2) Groundnut oil	**70**	**1**	**22**	**1**	**7**						**100**	**79**	**203**
N2.01 Groundnut trader	85		10		6						100	165	62
N2.02 Groundnut oil trader	85		1	3	11						100	48	58
N2.03 Groundnut oil traditional processor	50	50									100	5	63
N2.04 Groundnut oil mechanical processor			89	5	6						100	137	20
3) Yam	**34**		**59**	**5**	**2**	**0**					**100**	**73**	**71**
N3.01 Yam trader	27		71	1	1						100	62	31
N3.02 Yam flour trader	68		32	0	0						100	61	21
N3.03 Yam wholesaler	19		64	13	3	1					100	104	19

Source: Project Team

Table 3-21 Monthly prices of products and sales values by enterprise

State name/Product name Type of business and ID ◎ : Pilot Project implemented Local Government Area		Monthly unit price of product (% to average monthly price) Monthly sales/enterprise (% to average monthly sales/enterprise) 2009 Jun	Jul	Aug	Sep	Oct	Nov	Dec	2010 Jan	Feb	Mar	Apr	May	Monthly average price/ sales	Monthly average product price Monthly average sales/enterprise	
Kano State		Read shaded: more than average; Blue shaded: less than average														
1) Rice																
K1.01 Rice trader	Price	101	104	104	103	103	96	95	96	96	99	100	102	100	9,175	Naira
◎ Kura	Sales	126	90	89	86	89	107	106	104	94	99	106	104	100	1,885	'000 Naira
K1.02 Rice miller	Price	99	99	95	96	98	98	102	102	102	104	103	103	100	3,445	Naira
◎ Kura	Sales	96	108	100	102	96	101	101	102	92	108	97	97	100	66	'000 Naira
K1.03 Rice parboiler	Price	98	98	99	100	102	100	101	102	99	101	101	99	100	5,938	Naira
◎ Kura	Sales	86	77	73	91	87	126	122	123	98	116	101	99	100	123	'000 Naira
K1.04 Rice trader	Price	98	112	113	99	98	98	97	97	97	97	97	97	100	13,899	Naira
◎ Fagge	Sales	90	103	110	119	101	91	84	175	81	84	79	83	100	640	'000 Naira
2) Leather																
K2.01 Leather trader	Price	100	100	100	100	100	100	100	100	100	100	100	100	100	535	Naira
Dala	Sales	81	73	71	63	64	176	143	134	109	101	90	96	100	964	'000 Naira
K2.02 Traditional tannery	Price	100	100	100	100	99	100	99	99	99	99	100	100	100	501	Naira
◎ Dala	Sales	99	92	89	91	97	137	121	113	103	92	86	80	100	360	'000 Naira
K2.03 Leather products manufacturers	Price	100	100	100	100	100	100	100	100	100	100	100	100	100	863	Naira
◎ Dala	Sales	82	103	102	101	100	114	101	99	98	102	100	97	100	130	'000 Naira
3) Groundnut oil																
K3.01 Groundnut oil traditional processor	Price	107	106	105	88	88	88	88	101	107	107	107	107	100	214	Naira
◎ Dawakin Tofa	Sales	94	93	93	112	112	113	112	89	98	93	94	94	100	72	'000 Naira
K3.02 Groundnut oil traditional trader	Price	107	116	116	71	71	71	71	114	114	116	116	116	100	2,959	Naira
Dawakin Tofa	Sales	94	110	110	84	86	86	85	109	108	109	109	109	100	156	'000 Naira
K3.03 Groundnut oil trader	Price	110	109	112	113	108	100	84	84	85	94	99	102	100	43,864	Naira
Dawakin Tofa and Nassarawa	Sales	117	105	110	100	97	115	97	92	93	92	89	93	100	2,210	'000 Naira
K3.04 Groundnut trader	Price	28	28	121	120	120	120	119	119	119	119	129	60	100	56,553	Naira
Dawakin Tofa and Municipal	Sales	14	13	89	135	194	222	212	85	73	60	45	59	100	3,743	'000 Naira
K3.05 Groundnut oil mechanical processor	Price	6	6	143	144	144	144	144	144	210	102	6	6	100	21,989	Naira
◎ Dawakin Tofa and Kumbotso	Sales	4	4	144	231	244	205	163	102	82	13	4	4	100	2,570	'000 Naira
Niger State																
1) Shea product																
N1.01 Shea butter processor	Price	95	98	100	103	105	103	106	100	98	98	98	98	100	3,770	Naira
◎ Katcha	Sales	132	131	119	108	124	109	75	85	107	81	70	59	100	21	'000 Naira
N1.02 Shea nut processor	Price	93	96	97	99	108	110	110	93	94	102	94	103	100	3,182	Naira
Katcha	Sales	134	130	174	140	89	32	112	113	94	69	50	63	100	21	'000 Naira
2) Groundnut oil																
N2.01 Groundnut trader	Price	99	99	94	94	94	99	100	104	103	108	108	99	100	16,519	Naira
Kontagora	Sales	138	75	92	94	84	76	73	101	104	161	113	88	100	1,386	'000 Naira
N2.02 Groundnut oil trader	Price	111	102	102	102	102	97	91	88	97	110	97	102	100	5,593	Naira
Kontagora	Sales	170	156	133	107	112	100	74	58	63	60	65	102	100	54	'000 Naira
N2.03 Groundnut oil traditional processor	Price	78	78	112	112	112	90	103	91	92	104	114	114	100	2,068	Naira
◎ Kontagora	Sales	71	75	118	129	140	103	108	117	76	83	87	93	100	29	'000 Naira
N2.04 Groundnut oil mechanical processor	Price	115	99	90	95	73	103	110	109	108	96	84	119	100	20,397	Naira
◎ Kontagora	Sales	159	79	174	142	104	95	67	61	90	94	111	23	100	1,768	'000 Naira
3) Yam																
N3.01 Yam trader	Price	128	90	70	67	67	72	109	118	128	128	101	121	100	31,038	Naira
◎ Paiko	Sales	127	106	114	117	138	93	97	64	73	67	67	138	100	987	'000 Naira
N3.02 Yam flour trader	Price	199	89	85	85	85	83	84	93	104	100	94	98	100	5,779	Naira
Paiko	Sales	159	88	106	95	105	108	94	100	78	93	81	94	100	278	'000 Naira
N3.03 Yam wholesaler	Price	119	119	72	69	69	71	80	116	125	121	121	118	100	32,125	Naira
Paiko	Sales	69	98	109	101	81	89	103	46	91	158	141	115	100	1,541	'000 Naira

Source: Project Team

(2) Leather in Kano State

Influence of seasonality on sales prices of leather traders, traditional tanneries, and leather manufactures is low. Sales for leather traders and traditional tanneries increase from November to January despite stable prices. This indicates that these business types manage their sales volumes flexibly according to market demands. Sales price for leather manufacturers increases temporarily in November due to increased consumption around annual Islamic events, but is relatively stable throughout the year.

(3) Groundnut oil in Kano State

As regard to trends of product price and sales price for groundnut oil in Kano State, existence of two value chains should be understood. First, large-scale value chain consists of groundnut traders, mechanical groundnut oil processors, and traditional groundnut traders who are positioned upstream, midstream, and downstream of the value chain, respectively. Secondly, small-scale value chain consists of traditional groundnut oil processors and traditional groundnut traders who are positioned upstream and downstream of the value chain, respectively. As indicated by Table 3-21, size of value chain is based on the comparison of average monthly sales amount. The difference in monthly sales amount and in the degree of seasonality influence, which is greater for the first value chain than for the second one, suggests viewing the two value chains independently.

High seasonality is found for the large value chain in which mechanical groundnut oil processors exist due to influence of harvest seasons of groundnuts. Relationship between product price and sales price for groundnuts traders and mechanical groundnut oil processors, who are positioned downstream of traders, is characterized by a wide range for this value chain. The operation period for mechanical groundnut oil processors is from August to January. Mechanical groundnut oil processors close the factory or engage in other business activities for the rest of the year in order to adjust to seasonality. Extreme low sales price from May to July explains the unavailability of markets.

In this value chain, comparably less effect of seasonality is seen on business types positioned downstream of the chain. Sales price of groundnut oil traders decreases from December to February; however, level of decrease is not significant. Standardization of sales price and trading amount by groundnut oil traders is assumed in order to be uninfluenced by cheap prices of imported foreign vegetable oils, which are preferred by consumers in the markets.

Sales price trend for traditional groundnut oil processors and traditional groundnut oil traders is directly related; however, sales amount trend is inversely related. Decreased sales price of groundnut oil from September to December due to increased volume of groundnuts in the market is observed for both business types. For the business of traditional groundnut oil processors, large profits are made with decreased sales price while profits decrease with increased sales price. This scenario results from the business style taken up by traditional groundnut oil processors: high production of oil with low raw-material prices, and vice versa. Trading volume of traditional groundnut oil traders is stable regardless of rice price, which leads to rise and fall of sales price due to price changes. The same tendency is found in the business of the groundnut traders.

(4) Shea products in Niger State

Fluctuations in product prices for traditional shea nuts processors, positioned upstream of the value chain, and shea butter processors, positioned in the middle of the value chain, do not have a wide range, but are directly related. Product price increases from October to December while product price for the other periods is relatively low. Peak period in sales volume for traditional shea nuts processors is from June to September, corresponding to that for the shea nuts harvest seasons. Influence of seasonality on shea butter production, positioned downstream of the value chain, becomes weak while

peak season for shea butter production extends from June to November. Shea nuts production is dependent upon on the nuts harvest season: large volume of nuts is sold with low raw-material prices. On the other hand, large volume of shea butter is produced from June to July with cheap shea nuts when price of nuts is low. Higher profits are made when shea butter price is high from September to November. This business type adjusts production volume based on price trend of shea butter in the market.

(5) Groundnut oil in Niger State

Influence of seasonality on product price and sales price for groundnut traders in Niger State is relatively lower than that in Kano State. Product price is low from August to September while high from January to August. Since trading volume is stable, sales price is influenced primarily by the price of groundnuts. Traditional groundnut oil processors increase production volume from August to October in order to gain profits when price of groundnuts is low and oil price is high. On the other hand, although the oil price is high, market price has a tendency to fluctuate from March to April due to high raw-material prices. Storage of raw materials thus supports decreased price of raw materials, which then helps to increase profits by allowing selling of oil during times of high market sales prices throughout the year.

Oil production by mechanical groundnut oil processors is influenced by seasonality, with strong sensitivity to price changes in raw materials. Peak period of oil production is from August to October when price of groundnuts is low. At the same time, price of oil decreases. Sales price decreases from December to February when oil and groundnuts prices increase. Because of this price fluctuation, mechanical groundnut oil processors do not gain high profits when oil price is high. Improvements in production efficiency and cost reductions can be considered as means for expanded profits.

Product-price trends for groundnut oil traders, positioned downstream of groundnut value chain in Niger State, are exactly the opposite of those for mechanical groundnut oil processors. Period of high product prices for the mechanical groundnut oil processors from November to February is the period of low product prices for groundnuts traders. Reduced seasonality influence on the downstream of the value chain as well as price fluctuations according to price of other vegetable oils are the reasons for the above mentioned trends.

(6) Yam in Niger State

Product-price trends of yam traders and yam wholesalers are directly related. Product price increases from December to June while it decreases from July to November. Profits for yam traders are high when sales price is low, and vice versa. When sales price is low, large volume of yam is sold. When sales price is high, only a small volume of yam is traded. This relationship explains that fresh yam at a low price is preferred in the markets. If price of fresh yam is increased, it is possible that the distributed amount in the entire value chain is decreased.

Sales-price trend for yam wholesaler is similar to that for yam traders. However, when price of yam is high, sales amount is high. This explains that yam wholesaler has more capital than yam traders to purchase yam. Product-price and sales-price trends of yam flour traders become extremely high in June. One reason for this could be in the period of overlaps in yam harvest and drying before the rainy season.

3.2.9 Size of trade

Size of trade is indicated in Table 3-22. Most of the sales targets in the value chain are micro-sized enterprises or customers. Actual percentage of micro-sized enterprises is higher than the figures indicated in the table since the category of individual includes managers of micro-sized enterprises.

The only exceptions are groundnut traders, mechanical groundnut oil processors in Kano State, and yam traders in Niger State from which 24% to 36% of sales price is for small enterprises. From these figures, it is explained that development of small and medium enterprises in formal sector should be facilitated in the target product value chains.

Table 3-22 Percentage of sales value by purchasing enterprise size

State name/Product name Type of business and ID No. of employees	% of sales value by purchasing enterprise size Large >199	 Medium 50-199	 Small 10-49	 Micro <10	 Individual	 Total	Number of enterprises
Total							**1,404**
Kano State							**951**
1) Rice							**461**
K1.01 Rice trader		1%	2%	41%	56%	100%	202
K1.02 Rice miller				29%	71%	100%	50
K1.03 Rice parboiler				69%	31%	100%	24
K1.04 Rice trader					100%	100%	185
2) Leather							**204**
K2.01 Leather trader			2%	43%	55%	100%	68
K2.02 Traditional tannery				42%	58%	100%	61
K2.03 Leather products manufacturers				41%	59%	100%	75
3) Groundnut oil							**286**
K3.01 Groundnut oil traditional processor				36%	64%	100%	43
K3.02 Groundnut oil traditional trader				33%	67%	100%	36
K3.03 Groundnut oil trader				12%	88%	100%	45
K3.04 Groundnut trader		7%	25%	14%	53%	100%	82
K3.05 Groundnut oil mechanical processor			24%	26%	49%	100%	80
Niger State							**453**
1) Shea product							**179**
N1.01 Shea butter traditional processor				32%	68%	100%	120
N1.02 Shea nut traditional processor				55%	45%	100%	59
2) Groundnut oil							**203**
N2.01 Groundnut trader				21%	79%	100%	62
N2.02 Groundnut oil trader					100%	100%	58
N2.03 Groundnut oil traditional processor				75%	25%	100%	63
N2.04 Groundnut oil mechanical processor				76%	24%	100%	20
3) Yam							**71**
N3.01 Yam trader				43%	57%	100%	31
N3.02 Yam flour trader				68%	32%	100%	21
N3.03 Yam wholesaler			36%	35%	29%	100%	19

Source: Project Team

3.2.10 Recognition of market trend

Table 3-23 indicates the sales price, sales amount, purchase price, and purchase amount of products for each business type. Sales-price trend, price of raw materials, incomes, and expenditures are analysed based on survey results. Figures in the table indicate an upward tendency for sales and raw-

material prices, but an unclear tendency for incomes and expenditures. This analysis explains the inflation trend in the economic environment surrounding enterprises. Expanded budget from government causes inflation, which does not lead to substantial increase in profits for MSMEs.

Table 3-23 Enterprises' perception of prices and quantities of products and raw materials

State name/Product name Type of business and ID	Producs			Raw materials				Number of enter-prises
	Sales price	Volume of sales	Sales amount	Purchase price	Purchase quantity	Trend of purchase cost	Estimated trend of proft	
Total								**1,404**
Kano State								**951**
1) Rice								**461**
K1.01 Rice trader	up	down	stable	up	down	stable	stable	202
K1.02 Rice miller	up	down	stable	up	up	up	down	50
K1.03 Rice parboiler	up	up	up	up	up	up	stable	24
K1.04 Rice trader	up	down	stable	up	stable	up	down	185
2) Leather								**204**
K2.01 Leather trader	stable	stable	stable	stable	stable	stable	stable	68
K2.02 Traditional tannery	stable	down	down	stable	down	down	stable	61
K2.03 Leather products manufacturers	stable	stable	stable	stable	stable	stable	stable	75
3) Groundnut oil								**286**
K3.01 Groundnut oil traditional processor	up	up	up	up	up	up	stable	43
K3.02 Groundnut oil traditional trader	up	stable	up	up	stable	up	stable	36
K3.03 Groundnut oil trader	up	stable	up	up	stable	up	stable	45
K3.04 Groundnut trader	stable	down	down	stable	down	down	stable	82
K3.05 Groundnut oil mechanical processor	stable	down	down	stable	down	down	stable	80
Niger State								**453**
1) Shea product								**179**
N1.01 Shea butter traditional processor	up	up	up	up	up	up	stable	120
N1.02 Shea nut traditional processor	up	up	up	up	up	up	stable	59
2) Groundnut oil								**203**
N2.01 Groundnut trader	up	up	up	up	up	up	stable	62
N2.02 Groundnut oil trader	up	up	up	up	up	up	stable	58
N2.03 Groundnut oil traditional processor	up	up	up	up	up	up	stable	63
N2.04 Groundnut oil mechanical processor	up	up	up	up	up	up	stable	20
3) Yam								**71**
N3.01 Yam trader	up	up	up	up	up	up	stable	31
N3.02 Yam flour trader	up	up	up	up	up	up	stable	21
N3.03 Yam wholesaler	up	up	up	up	up	up	stable	19

Source: Project Team

CHAPTER 4. Value chain analysis

4.1 Kano State

4.1.1 BDSPs in Kano State

Business Development Service Providers (BDSPs) currently available in Kano State are divided into public and private BDSPs. The descriptions of the respective BDSPs are as follows:

(1) Kano State Chamber of Commerce and Industry

Established in 1923, the Kano State Chamber of Commerce and Industry provides services to its member of 2,115 enterprises (as of June 2009). Activities include provision of business support services, organisation of missions to other countries, and advocacy and lobbying activities to the state government. Financial resources for administration consist of membership fees and fees from provision of various certificates to local enterprises. Its relationship with SMEDAN is strong; however, the current capacities of financial and human resources are inadequate to meet the MSMEs' needs for business development services.

(2) Business Information Centre in Kano State

OLOP Concept Paper states that a Business Information Centre (BIC) should be established in each LGA to provide necessary information and services to MSMEs. However, the development of BICs is in its early stage, and currently one BIC is in operation in Kano City. The BIC is operated by the qualified contract staff member without sufficient budgetary allocations and support assumed to be provided by SMEDAN. The BIC has been trying to mobilise financial and technical local resources in the process of BDS provision; however, its recognition among MSMEs in Kano State is not established. .

(3) Nigerian Association of Small Scale Industrialist

Nigerian Association of Small Scale Industrialist (NASSI), an umbrella organisation of Small Scale Industrialists, was established in 1978 and is registered under the Land Perpetual Succession Act. The Association has 37 states and Federal Capital Territory (FCT) level branches as well as 774 LGA-based branches in Nigeria. The Kano State Branch functions as a catalyst for empowering small-scale industrialists and enhancing the economic activities while providing efficient and secure services to its committed members.

(4) Nigerian Agricultural Co-operative and Rural Development Bank Limited

With a mission of providing affordable financial and advisory services to farm and non-farm enterprises, Nigerian Agricultural Co-operative and Rural Development Bank Limited (NRCRDB) serves as a financial institution. The national head office is located in Kaduna State, with six zonal offices (Bauchi, Ibadan, Enugu, River, Kano, and FCT) in respective geo-political zones. Under the Kano zonal office, 39 branches exist. Within Kano City, two branches exist: Kano City branch and Gwammaja branch (the total number of branches in Nigeria is 20). The NRCRDB provide two categories of financial services: 1) Micro-credit service without collateral; and 2) credit service requiring collateral such as mortgages, real property, endowment insurance policies, and government guarantees. Annual interest rate for the micro-credit is 8 percent for the agricultural sector, and 18 percent for the non-agricultural sector. NRCRDB conducts simple feasibility studies with borrowers under both service schemes. The maximum amount of micro-credit is 250,000 per person. Both individual lending and group lending are available.

4.1.2 Rice

(1) Current situation of Business Development Service Providers

The following are recognised Business Development Service Providers (BDSPs) available for the rice value chain in Kano State.

1) Kano State Technology Incubation Centre
Kano State Technology Incubation Centre (KTIC) has a capacity to accept up to 24 entrepreneurs to start a wide range of businesses. During the incubation period, entrepreneurs receive free space, trainings, technical advice, and information about business entrepreneurship.

KTIC has a collaborative arrangement with Kano Agricultural and Rural Development Agency (KNARDA) to provide rice seeds to farmers. It also has resource personnel who provide lectures and technical advice to students of the centre and other institutions upon request. Technical subjects vary from bookkeeping to technical advice on specific commodity processing.

With support from the Kano State Ministry of Commerce, Industry, Cooperatives, and Tourism (KMCICT), KTIC has provided seven graduates with lands to start their own businesses. The amount of the fund used to provide the lands is NGN 750 Million. By applying this scheme to rice, entrepreneurs completing their incubation period will be able to obtain land to start their businesses.

KTIC also fabricates machines such as rice milling machines, manual rice de-stoners, and groundnut oil milling machines at a reasonable cost level. For example, fabrication of one ground nut oil extraction machine costs NGN 85,000. Rice processing enterprises may be able to order or experiment with tailor-made machines designed to meet specific needs.

2) Kano Agricultural Rural Development Agency
Kano Agricultural and Rural Development Agency (KNARDA) is an agricultural extension agency belonging under the Ministry of Agriculture. The agency provides a wide range of technical support to farmers with target value chains such as rice, dairy products, and maize. KNARDA's activities to enhance the rice value chain are as follows:

- Development and rehabilitation of production infrastructure such as dams and irrigation schemes
- Acquisition and distribution of appropriate varieties of seeds to increase yields
- Improvement of rice processing technologies, especially parboiling and milling

KNARDA implements a wide range of projects to provide common facilities for selected rice clusters and markets. Selected clusters and markets include Kura, Tudun Wada, Kwanar Dawaki, and Dawanau. Basic design of the facilities was constructed, and currently, detailed designs are being undertaken. KNARDA is seeking sources of funds from different ministries and donors for the establishment of facilities with water and back-up electricity supply. In case of Kura, KNARDA secured land for the facility. However, completing the project is expected to take some time due to the large amount of required funds. KNARDA also recommends to farmers rice varieties with high commercial potential.

(2) Clusters selected for surveys and analyses

1) Parboiler cluster

Parboiling is the hydrothermal treatment of paddy before milling. The process consists of soaking, heat-treating by steam, and drying[1] (Wimberly, 1983). Parboilers charge fees for these processes, which are generally undertaken by women. Under this technical cooperation, two associations in Kura have been chosen for the surveys and analyses. Six parboiler associations, consisting of 293 parboilers, exist in Kura rice processing centre. About seven hundred parboilers, who do not belong to any associations, exist in Kura rice processing centre. The number of parboilers has increased by 80% during the last five years.

2) Rice miller cluster

Milling is an automated process conducted after parboiling to remove husks and bran. After milling, rice becomes ready for sale at a market. Millers usually have small sheds and are located along major roads. In Kura rice processing centre, one rice miller association is chosen as the rice miller cluster for the surveys and analyses. Fifty rice milling enterprises belong to the association.

3) Rice trader cluster

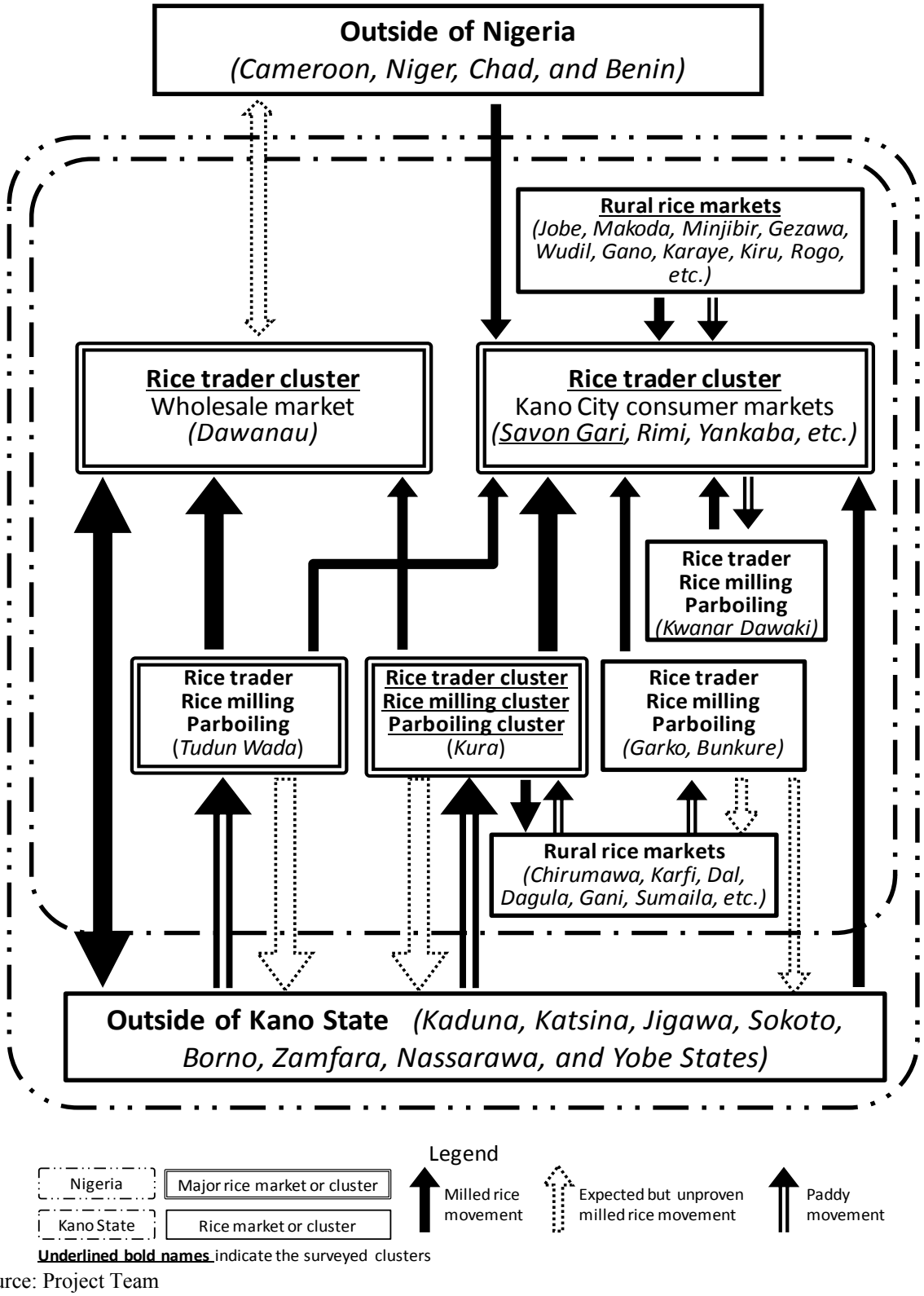
Rice traders purchase either paddy or milled rice at rice processing centres. After purchasing rice, traders own the rice and can freely trade the purchased rice. They deal with farmers, parboilers, millers, retailers, and/or other traders. In this report, a trader with ownership of his trading product is called a "trader."

Another type of trader is called a commission agent, who trades paddy or milled rice for his or her customers. Their customers are farmers, parboilers, and millers. While the function of a commission agent is similar to that of a trader, a major difference between a commission agent and a trader is that a commission agent does not own the rice that is sold. Commissions are charged to their customers in return for their services. They exist in areas from interstate grain markets to rural rice processing centres. In Kura City, two rice trader's associations exist. The two associations consisting of 202 members are chosen to form the Kura rice trader cluster. The Kura rice trader cluster is defined by selecting the rice trader association with 185 member traders in Savon Gari, Kano City. The Kura rice trader cluster is located at the rice processing site while the Kano rice trader cluster is located in the rice retail and wholesale area.

(3) Rural rice processing and trading centres

Numerous small-scale rice processing centres exist in rural areas of Kano State. The sites usually consist of parboilers, millers, and traders, who are unlikely to form associations. In order to characterise the sites, three areas, which are processing and marketing centres of locally-produced rice, have been defined and chosen for field study: Karaye area in the east, Gano area in the west, and Makoda area in the north. In each area, around three towns were chosen for value chain analyses.

[1] At Kura in Kano State, traditional parboiling method includes low temperature boiling as the first step rather than just soaking. Low temperature boiling continues about twelve hours overnight, and is followed by steam for a few hours in the morning before drying.



Source: Project Team

Figure 4-1 Structure of rice value chain in Kano State

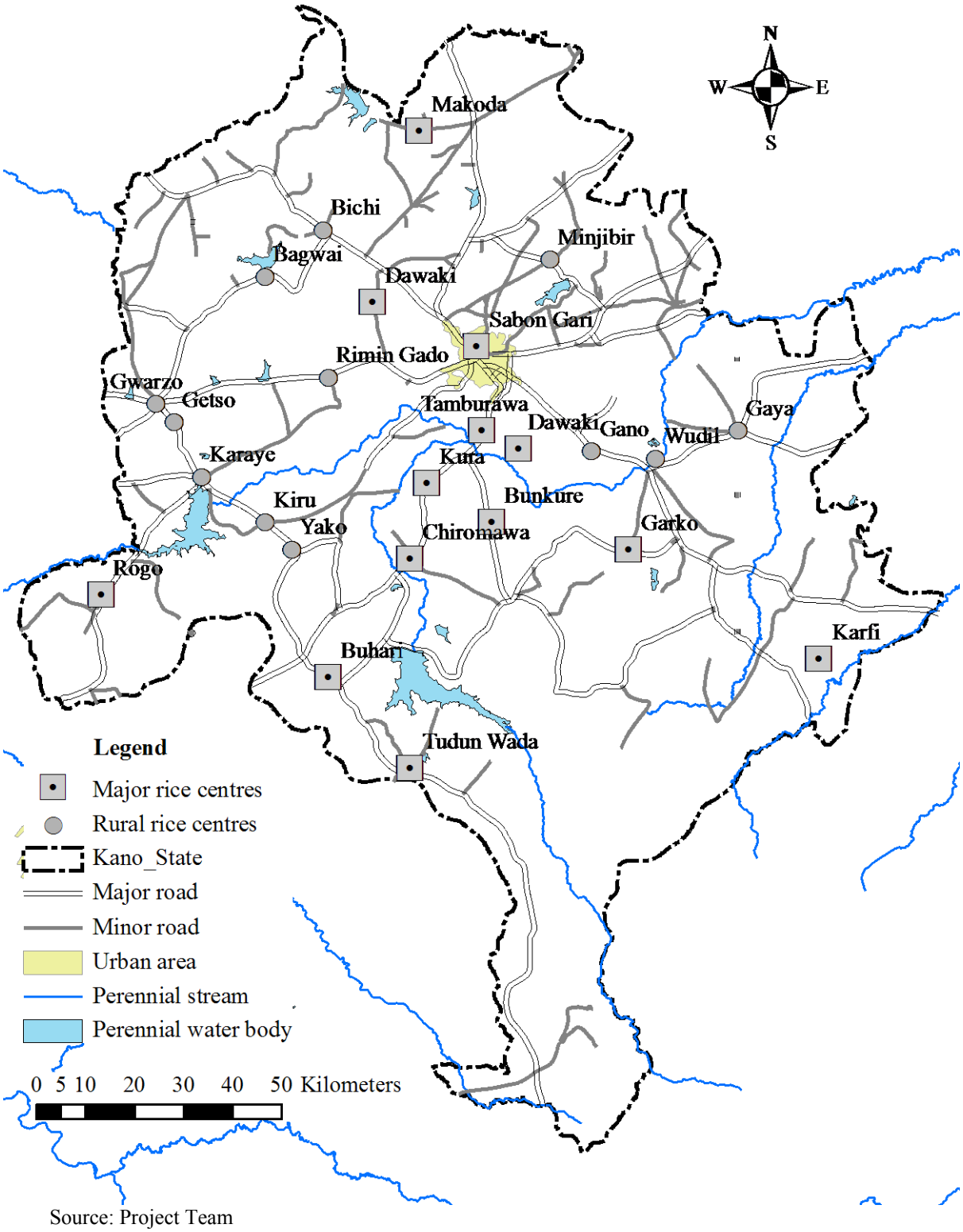


Figure 4-2 Locations of rice centres in state of Kano

Table 4-1 Number of enterprises in rice processing and trading centres in Kano State

Name of rice processing/trading centres	Major function (P: processing) (T: trading)	Number of enterprises				% to Total			
		Par-boiler	Miller	Trader	Total	Par-boiler	Miller	Trader	Total
Major rice centres									
1-1. Bunkure Town	P and T	16	18	21	55	29%	33%	38%	100%
1-2. Chirumawa	P and T	27	18	21	66	41%	27%	32%	100%
1-3. Dawanau[1]	T	-	-	-	-	-	-	-	-
1-4. Garko	P and T	25	25	25	75	33%	33%	33%	100%
1-5. Karfi	P	105	25	-	105	100%	-	-	100%
1-6. Kura[2]	P and T	1,000	50	202	1,252	80%	4%	16%	100%
1-7. Kwanar Dawaki/ Tamburawa	P	24	104	-	128	19%	81%	-	100%
1-8. Makoda	P	33	2	29	64	52%	45%	3%	100%
1-9. Rogo[3]	P	-	20	-	20		100%		100%
1-10. Savon Gari	T	-	-	185	185			100%	100%
1-11. Tudun Wada	P and T	140	30	55	225	62%	13%	24%	100%
1-12. Zon Gon Buhari (Bunkure area)	T	10	15	28	53	19%	28%	53%	100%
Total		1,380	309	539	2,228	62%	14%	24%	100%
Rural rice centres									
2-1. Jaube (Bagwai)	P	-	1	-					
2-2. Bichi	P	-	0	-					
2-3. Gano	P	-	2	-					
2-4. Gaya	P	-	0	-					
2-5. Getso	P	-	2	-					
2-6. Gwarzo	P	-	1	-					
2-7. Karaye	P	-	8	-					
2-8. Kiru	P	-	2	-					
2-9. Minjibir	P	-	2	-					
2-10. Rimingado	P	-	1	-					
2-11. Wudil	P	-	4	-					
2-12. Yako	P	-	1	-					
Total		-	24	-					

Note: 1) The number of enterprises in Dawanau is not obtained. 2) The number of parboilers is estimated and an approximate number. 3) No attempt was made to collect data on parboilers and millers. 4) No attempt was made to collect data on parboilers and millers from 2-1 to 2-12.
Source: Project Team

(4) Characteristics of rice value chains in Kano State

Source: Project Team
Figure 4-1 and Table 4-1 indicate the structure of the rice value chain and the number of enterprises in major rice processing centres in Kano State. Source: Project Team
Figure 4-2 shows the locations of rice centres in the State. Kano State is one of the major rice distribution centres in Nigeria where commodity traders conduct regional, interstate, intra-state, and international trading in rice products.

The size of rice processing centres can be indicated by the number of enterprises shown in . Kura rice processing centre supports the largest number of enterprises, followed by Tudun Wada and Savon Gari rice processing centres. Most of the centres – consisting of parboiler, miller, and trader clusters –

include one to several business associations. Although primary information is still lacking, Dawanau Market is assumed to be one of the largest rice wholesale centres in Kano State.

Dawanau Market and Kano City based markets, including Savon Gari Market, are focal points of rice traders and retailers and considered as large rice centres. Kura and Tudun Wada are major rice processing centres with large numbers of parboilers, millers, and retailers. Kwanar Dawaki, Bunkure Town, and Garko are considered as medium scale rice centres with lower numbers of processors and traders. These rice processing centres serve Kano City markets. A small number of processors and traders are characterised as rural rice processing centres which supply rice products to the large centres such as Kano City markets and other rural centres.

1) Two major rice processing centres

Kura and Tudun Wada are the capitals of LGAs in southern part of Kano State, and are major centres for rice processing with parboiling, milling, and trading clusters. Other minor rice processing centres are distributed throughout Kano State.

Reasons for concentration of the two major rice processing centres in the south are the existence of large irrigation schemes, and sufficient rainfall necessary for reined paddy production[2]. Often rice processing centres are associated with water development and irrigations schemes. However, it is reported that, due to inadequate management of the schemes, optimal rice production potential is not fully exploited even in the two major rice processing centres.

The paddy rice processed in Kura and Tudun Wada rice processing centres is purchased in surrounding local farms and markets, and also in Karfi, Dal, Dagla, and Gani of Kano State. The paddy rice is also supplied from markets in Kaduna State, Jigawa State, Sokoto State, Borno State, and Yobe State.

2) Savon Gari market

In Kano City, Savon Gari is the largest wholesale and retail rice market in the city. Other markets in Kano City are Rimi, Kurmi, and Yankaba, which are all retail markets.

Sabon Gari market is located in Kano Municipality and is a general goods market as well. Traders trade milled rice but not paddy rice in Sabon Gari market. Kura rice processing centre is a major supplier of milled rice to the market. Milled rice also comes from Tudun Wada, Dorawar Sallau, Gaya, and Chiromawa in Kano State. Supplies also come from Dandume in Katsina State, Talata Mafara in Zamfara State, Lafiya in Nassarawa State, Bauchi and Azare in Bauchi State, Maigatari in Jigawa State and Machina in Yobe State.

Milled rice sold at Sabon Gari market is purchased by Savon Gari traders from other markets in the city. A small portion of milled rice comes from Cameroon, Niger, Chad, and Benin other than Thailand. Some stores in the market sell only imported rice from Thailand.

The Yan Kura Rice Sellers Association with 185 members is an umbrella association of rice traders for Savon Gari market. There are non-association traders in the market. There are about 40 business spaces leased by the traders from a market company. In front of these spaces, there is a block of temporary open shades that is also leased by rice traders from a market company. Rice traders in the market are mainly men, with only a few women engaging in rice trading.

[2] The state lies in the tropical wet-and-dry climatic zone. The average annual rainfall is approximately 1,000 mm in the southern part of the state, 800 mm around metropolitan Kano, and 600 mm in the northeast area. (Badayi M. Sani and Sa'id Suleiman, n.d., sec 3.3, The structure of Kano economy)

The volumes of rice traded over the last 5 years increased due to high demand for local rice. Meanwhile, there has been an increase of about 40% in the number of traders operating in the market over the same period. The volume of rice handling depends mainly on the size of the enterprise, with small enterprises handling 1 to 5 bags[3] of milled rice per day and medium and large traders handling 10 to 50 bags per day.

3) Dawanau market

Dawanau market is an interstate wholesale grain market located in the outskirts of Kano City. Rice from Tudun Wada and Kura rice processing centres is traded not only by traders of Kano City based markets, but also by Dawanau market traders. Tudun Wada rice processing centre is a major source of milled rice for Dawanau market. The majority of rice from other states and outside countries is traded through this market.

Table 4-2 Sources and prices of milled rice to Dawanau interstate market

	Source of milled rice	Amount of milled rice	Price of milled rice per bag
1	Tudun Wada (Kano State)	1,200 to 2,000 bags	NGN 12,500 to NGN 14,000
2	Dadume (Katsina State)	300 to 450 bags	NGN 12,000 to NGN 13,200

Source: Project Team

Traders of Dawanau market go to the Tudun Wada rice processing centre twice per week (market days) to purchase rice from millers and traders. Dandume market in Katsina State is another important source of rice, especially during the peak season period (December to March). Even though the average price of rice is higher, trade volume with Tudun Wada rice processing centre is larger.

Moreover, even though it has not yet been confirmed under this study, some information sources indicate that traders from neighbouring countries such as Cameroon, Niger, Chad, and Benin bring rice to Dawanau market, and Nigerian rice seems to be exported to these countries as well. Hence, supply source of rice for this interstate grain market stretches to outside countries.

Table 4-3 Types of rice traders at Dawanau interstate market

	Type of rice traders	Transaction volume per month
1	Wholesaler (Large scale)	500 to 800 bags
2	Wholesaler (Medium scale)	150 to 180 bags
3	Wholesaler/retailer (Small scale)	70 to 90 bags

Source: Project Team

Three categories of rice traders were identified at Dawanau market. The first categorised traders are about 40 large wholesalers. They sell mostly to public boarding secondary schools in Kano State on a contract basis. They have storage facilities in the outskirts of the market where they store milled rice purchased before supplying it to the schools or other buyers. The second category is 100 medium scale wholesalers. This category mostly supplies milled rice to retailers within and outside the Dawanau market, and they also sell directly to consumers who buy in bags. The third category is 160 small scale

[3] One bag is 100 kilograms.

traders who are mainly retailers. They rely mostly on the medium scale traders for supply of milled rice. They sell mainly to individual consumers in smaller units such as Tiya or Mudu[4]. These traders do not have knowledge of the varieties of rice they are selling.

4) Middle scale rice processing centres

There are several medium scale rice processing centres. As shown in Figure 3-2, they are Kwanar Dawaki, Bunkure Town, Garko, and Karfi, their locations are not far from Kano City markets, mainly in south. Milled rice from these medium scale rice centres is supplied to Kano City markets or other major rice processing centres. There are associations for different clusters at all of these middle scale centres. Quality of milled rice from Garko is the highest and well known in the state.

Paddy rice found in Garko is gathered from surrounding farms and markets such as Sumaila, which supplies high quality paddy rice.

5) Rural rice processing centres

Rural rice processing centres are located all across the state, each rural town has 1 to 8 milling places. Milled rice in these rural areas is consumed locally, and excess at the markets is purchased by traders from Kano City based markets which there is an exception such as Makoda rural rice centre. In rural areas, milled rice is sold at local markets by farmers or commission agents. Milled rice in a rural market is consumed by local residents. At the same time, traders from outside states purchase milled rice at these local markets to sell at different places. This is to meet increasing demand for rice in Kano City and other states.

Karaye is relatively a large rice processing point in the western rural area of Kano State and is located about 79 km from Kano City. Presently, rural farmers use water pumps for irrigation of rice farms during the dry season, while rain is used for rice farming during the rainy season. Thus, with the presence of two dams (Karaye and Challawa dams), the volume of rice production in the area is large. In six towns in the western area, 16 functioning milling enterprises and 20 functioning milling machines are recognised in this area.

In addition to sites on the western side of the state, there are several rural rice processing sites in the eastern side of Kano State. Gano is a relatively large one about 25 km from Kano City, located in the Dawakin -Kudu local government area. It is a rural community engaged in farming but there are no rice farms in the area. Traders in the area practice their business mainly at Makole, Wudil, Garko, Dawakin- Kudu, and Warawa markets. In the northern area, there are fewer rice processing centres compare to other areas. Only Makoda and Tomas Dam areas are recognized as rice processing sites. Thus, there are many rural rice processing centres across the state, but numbers of the centres vary depending on areas.

(5) Characteristics of Kura and other major rice processing and trading centres

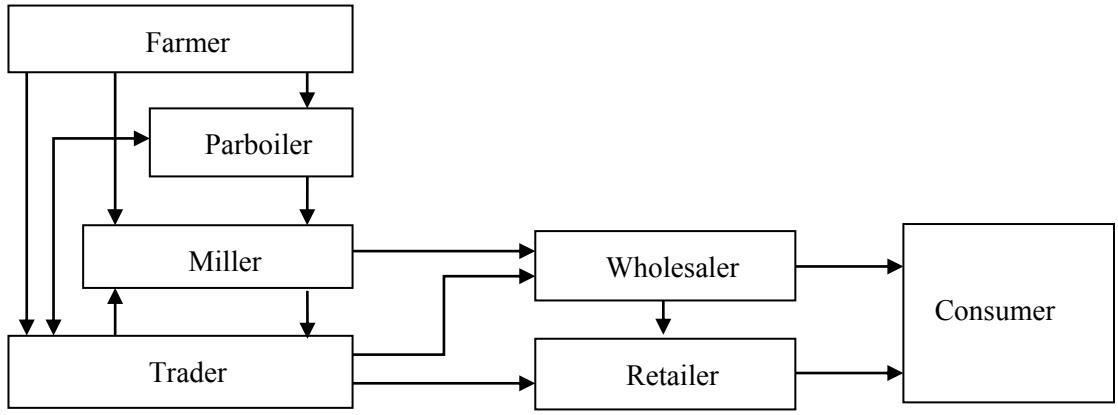
As stated in the previous section, there are two major rice processing sites in the state, and Kura deals with a large volume of rice and quality of rice varies. There are three clusters, parboiler, miller, and trader, in the area. Kura rice processing centre contains typical enterprises of each cluster for the state. It has a strong tie with the Kano City based largest wholesale market. Thus, in this section, characteristics of one of the major rice processing sites and one major Kano City market will be described and analysed. The rural rice processing system, which is a very important function, will also be described in more detail.

[4] One Tiya means a bowl used in a rice market and one Mudu means half of one Tiya. One Tiya is equivalent to 2.5 kilograms. One Mudu is equivalent to 1.25 kilograms.

1) Enterprises and their management

Size of enterprises in Kura

Most of the parboiling enterprises have two to four employees excluding the owner of the enterprise. Millers' enterprises are almost the same size as parboilers,' or smaller. Milling enterprises usually have one to two workers in addition to the owner of the company. They usually have one technician in each enterprise as well. Traders' enterprises are larger than the previous two clusters. Two to five labourers work at traders' enterprises in Kano. Normally, farmers sell paddy rice to either parboilers or traders. Then, parboilers bring rice to millers after parboiling. Otherwise, traders purchase paddy rice and bring it to parboilers and millers before selling at markets. Figure 4-3 shows a typical relation between clusters and a flow of rice.



Source: Project Team

Figure 4-3 Typical value chain within Kura rice processing centre

As shown below, at Kura rice processing site, some business owners take more a holistic approach by integrating other functions than their original businesses.

- Trading and milling
- Parboiling and trading
- Producing (farming) and trading
- Producing (farming), milling, and trading
- Producing (farming), parboiling, and trading

Integration of other business functions may improve profitability, but the ratio of these business owners seems to be low in Kura. Expanding their business areas or combining with other clusters would require strong commitment and cooperation among enterprises. At Kura, traders earn the highest profits among other business types and they seem to be the most influential. Therefore, traders have more opportunities of integrating other business functions than do millers and parboilers.

Number of Enterprises

According to the value chain survey and focus group discussions at Kura rice processing centre, the number of people and enterprises of each cluster have been increasing over the last five years.

Especially, the number of parboilers has increased rapidly and almost each household engages in parboiling business. According to a leader of the parboiler's association, in this last five years, there has been an 80% increase in the total number of parboilers in the Kura area and currently there are approximately 1,000 parboilers in the Kura rice processing centre.

Registration

Most of the enterprises located in Kura rice centre are not registered. Enterprises usually prefer to register with the government, but some do not. Non-registered enterprises claim that either they do not have appropriate knowledge for registration or they do not feel the necessity for it. In addition, , enterprises in the Savon Gari market are also not registered, as they have no knowledge of registration procedure and do not have the inclination to register, because of inadequate knowledge of benefits attached to enterprise registration.

Employees' Salaries

The educational background of the parboilers' reflects their skill level. . The amount of salary is determined based on total profits of each enterprise and agreement between the owners and workers. If the owner's children work for their mother, they do not receive any salary. These workers at parboiling enterprises are all female who have no education. They work as temporary workers throughout the year. There is also a wide range in owners' salaries based on profit levels of parboiling enterprises.

Table 4-4 Salary range of employees and owners by clusters at Kura rice centre

	Cluster	Employee	Owner
1	Parboiler	NGN 900 to NGN 2,800 per month	NGN 900 to NGN 40,000 per month
2	Miller	NGN 5,000 to NGN 15,000 per month	NGN 15,000 to NGN 35,000 per month
3	Trader	NGN 1,500 to NGN 15,000 per month	NGN 15,000 to NGN 60,000 per month

Source: Project Team

At millers' enterprises, the salaries of the permanent workers are higher than the temporary workers.' Workers are all males and have educational backgrounds mainly with primary school graduate level. They work at the same enterprise throughout the year.

In Kura rice processing centre, traders are also all males and work for 12 months. They are usually permanent workers and not related to the owners. Compared with millers, more workers hold secondary school education. For Savon Gari's case, salaries are paid on a daily basis, and average salary is between NGN 6,000 and NGN 30,000 per month per employee or enterprise owner. Salary level of traders is the highest among these three types of clusters, for both workers and owners.

Decision Making System

Companies practice a top-down decision making system. The decisions are made by the owners, regardless of the business type. This indicates that MSMEs have been operated by strong leadership of the owners. Owners' knowledge, skills, and market conditions form decisions of their enterprises.

Accounting System

Regardless of the cluster, the majority of the enterprises do not practice bookkeeping to track records of the company's finances precisely. The owners of enterprise make judgement based on the memories on transactions. However, their memories may not always be correct and there is a possibility that deficit may occur due to miscalculations in their minds. Only very limited numbers of enterprises (mainly traders) practices cashbook type of records. Many parboilers mentioned that they do not manage their finances at all. The introduction of the bookkeeping method would benefit the MSMEs in the entire rice value chain.

Human Resource Management
Some enterprise owners provide their workers. The practice of the safety measures such as usage of hand gloves, facial masks, and additional clothing to millers and parboilers are found in MSMEs. Other types of benefits for their employees are not recognised, except for informal support and gifts for special occasions. The majority of owners feel that they need to improve their human resource management skills although they do not have opportunities for such kind of trainings.

Marketing Strategy
Demand for milled rice increases both at the end and the beginning of the month based on the cash flows generated by the salary periods. During this period, prices of milled rice are raised and still can be sold well. In the middle of the month, demand for rice is decreased and rice business stakeholders have to lower prices and the amounts of fees each enterprise takes. This is a business strategy taken by rice business practitioners. Other than this, there are no outstanding business strategies recognised from the survey results.

Claim Management
Suppliers do not accept low quality parboiled rice. In that situation, parboilers have to refund or redo the parboiling for their customers. When quality of paddy rice is low, such as when it contains stones and has a high moisture rate, farmers are requested to replace low quality paddy rice with better quality paddy rice. Hence, replacement or refunding money is a common practice for claim management in the rice industry.

Land use management
There is a land owner at the site, and an enterprise leases a portion of the land. Even though the land is not the tenants' property, they have certain levels of autonomy to decide layout of which enterprises use which part of the land, if they all agree to change layout of enterprises. Thus, layout could be changed to a more efficient way at clusters.

2) Production, distribution, and consumption channels
Kura rice processing centre is located in the middle of Kano State along the Zaria Road, which is a major highway connecting Kaduna State and Kano City. It takes about forty minutes by car from the centre of Kano city. There are rice producing farmers near the area, and parboilers, millers, and traders stationed in this site. All the processing can be completed in this site. It has the strongest tie with Savon Gari market of Kano City to supply milled rice.

Tudun Wada, another major rice centre in the state, is the same type of centre as Kura in that it contains all kinds of enterprises as well as rice producing farmers. Tudun Wada is located two hours south from Kano City along Zaria Road. Milled rice from this centre is supplied to different markets, particularly to interstate markets and Kano City based markets.

Garko is a medium scale rice processing centre located two and half hours southeast of Kano City. It is known as the highest quality rice processing centre, because of its unique way of parboiling and drying rice. The difference between this centre and Kura and Tudun Wada is that there are not very many rice producing farmers near the Garko area. Farmers from different locations bring paddy rice or parboiled rice to the Garko area to mill or to sell at the market.

A similarity of these centres is that they can process rice and sell to traders from different markets across the state and even from outside states. Also, these processing centres have been functioning as ordinary markets to sell milled rice for local citizens.

As far as traders' behaviours are concerned, at large scale and medium scale rice centres, large scale millers/traders buy paddy rice and process it by themselves. Small scale traders tend to buy milled rice and sell it to large scale buyers or to consumers. Some traders buy paddy rice, and process and sell it,

and this can happen due to the characteristics of Kura rice centres where many rice producing farmers are located close to the site. This tendency is seen at other large and middle scale rice processing sites in Kano State.

Twenty six varieties of rice have been recognised in Kano State (Optimum Agricultural Consultants, 2007). At any rice processing sites and markets, popular rice among different clusters were the same. They are SIPI, Jamila, and WITA. These three varieties are commonly sold at major rice centres and other markets.

3) Prices and trading volumes

Quality of rice has a strong impact on price. Quality is one of the major price determinants. There are a few other major factors for price of rice; one is variety of rice and the other is availability of paddy rice by season.

Situations of major rice processing centres and markets

Baseline survey conducted in Kura indicates that the price of processed rice decreases between September and December. Then, price starts to become higher gradually after January to March. Usually, the June to August period has the highest selling price of processed rice. The price of milled rice sold by Kura traders ranges from NGN 7,000 to 14,800 per bag, depending on the season, quality, and variety of rice.

As far as trading volume is concerned, there is seasonality in price and volume of processed rice. November, December, and January are the highest trading period, and after this period, the volume sold starts to decrease gradually. September and October are the lowest period in trading volume in the Kura cluster. More parboilers tend to feel that both price and volumes of their merchandise have increased. One parboiler of Kura mentioned that she used to parboil only a few bags of rice per day, but she now parboils 30 bags per day and her profit has increased.

However, the majority of millers and traders think that the price of their merchandise has increased, but volume of their merchandise has decreased. One miller in the Tudun Wada cluster also stated that his trading volume has decreased in these past few years. This can be related to increase in total numbers of millers and traders at Kura rice centre in these few years.

Imported rice is sold at city based markets such as Savon Gari and sometimes at supermarkets. Imported rice is mainly from Thailand, and there are different varieties. One kind costs NGN 7,500 per bag and the other kind costs NGN 7,200 per bag at Savon Gari market in July, off peak season. Sizes of the bags are 50 kg. Imported rice is not sold at Dawanau market.

Prices and volumes at rural rice centres

In rural areas, farmers bring their own paddy rice to ask for milling. The cost of milling one bag ranges from NGN 300 to 400. The farmers pick up milled rice and sell them to traders at a local market. One farmer brings about 70 bags between June and September to millers and estimated that 5 out of 70 bags are consumed by the farmer.

Millers in rural rice centres mill about 10 to 30 bags per week in the rainy season and about 40 to 50 bags per week in the dry season. They operate the milling machine throughout the year. Most of these millers mill other crops such as maize, but rice is a predominant crop in total volume. They sell rice bran and husks for animal feeding. These millers' perceptions on change of volume are that it has increased in these past few years. Therefore, they have positive prospects for their future business due to the increase in volume.

There are parboilers in rural towns as well. Two kinds of parboilers exist, and one is a farmer who parboils at his own home and brings rice to milling places. The other is a parboiler who parboils for

other farmers and charges them fees. Parboilers charge from NGN 400 to 700 per bag[5] of rice. There are an estimated 10 parboilers in the Gano area (eastern part of the state) who process 5 to 10 bags of paddy rice per day during the peak period and 3 to 5 bags during the off peak period.

4) Financial and economic status of Kura rice value chain

Annual Expenses

Annual expenses of the enterprises in Kura vary largely from 5% to 85% of their net profits in a year. It depends on profit level of their business, but their management affects amount of expense. The highest expense is labour cost, regardless of the cluster. Transportation cost also accounts for a large portion of their expenses. More cost efficient business practices could increase their profit margin, and this will be one of the intervening points in the pilot project.

Access to formal loans

The majority of the rice industry enterprises have not been able to access commercial loans from banks. Most of the enterprise owners have been refused loans by banks and thus, they borrow informal loans from their friends and money lenders. Some of them gave up borrowing money from the banks due to high interest rates. Many traders in Kura and Savon Gari mentioned difficulty of access to commercial loan to expand their business. Lack of extra capital limits business opportunities of small and medium enterprises in the rice industry.

Almost all the enterprises in rice industry practice dealings on credit (DOC), which respondents of the surveys stated that it has been a business practice in this area. The ratio of DOC varies, but almost all the enterprises deal with credit for their business transactions. This is a business custom in this area.

5) Rural rice processing management and business styles

A milling enterprise in the cluster employs an average of one operator. Salaries are paid daily based on the number of bags of milled rice. One milling enterprise has only one or two milling machines. One to four workers operate milling enterprises in rural towns. They use Indian milling machines, which are of the engelberg type. This indicates that their technology level is the same as that of millers in large rice processing centres.

Parboiling is undertaken at farmers' home by women, a few kilometres away from town in rural areas. They work individually using their own drums and do not hire anyone. Parboilers, millers, and traders work separately even though certain enterprises have strong relations with particular enterprises to do business with.

In rural areas, there are several unique business practices recognised that are not common at major rice processing sites. There is a milling enterprise which also parboils rice. For example, in a small village called Jaube in Dawakin Tofa, there is a miller who also parboils by himself. He charges NGN 800 per bag, 50 kg, which includes both milling and parboiling cost. The owner contracts ten parboilers and ask them do it on a request basis. He has made more profits than before, when he used to focus only on milling, because he can process a greater volume in a given amount of time.

There are other unique cases recognised in rural areas such as Wudil, in the eastern part of Kano State. Parboilers buy paddy rice and parboil it by themselves, then bring the rice to millers. After paying milling fees to millers, those parboilers bring milled rice to nearby markets to sell it by themselves. Although this is not a common business practice at other major rice processing sites, this business style has been practiced for more than 20 years in this area.

[5] 50 kilogram is the size of one bag in this area.

In rural areas, more flexible business practices were recognised, since rural enterprises' competitive strength is generally weaker than enterprises of other medium to large scale rice centres. Some aspects of these integrated business practices could be adapted at medium to large scale rice centres.

6) Employed technologies and techniques

Parboiling

70cm diameter aluminium pots are used for parboiling and the source of heat is from rice husk and fire wood (Guinea corn stalk). An average of 80 litters of water is used for one batch of the parboiling. Cost of par boiling is NGN 250 per 75kg bag of paddy. Paddy is poured into the pots and water is added. Then, paddy is heated for an average of 12 hours overnight. In the next morning, it is steamed for about one hour. Steaming is undertaken by reducing the amount of water in the pod, stirring rice and adding more heating fuel. Towards the end, a polypropylene bag was put on the aluminium pot to maximize a steaming effect. When a crack appears in husk and becomes soft, the parboiled paddy is then taken out from the pot for drying.

Garko is a middle scale rice centre in Kano State and the milled rice is well known as high quality. Different parboiling method is employed in the Garko cluster compared to other rice centres. The paddy is pre washed and poured into already boiled water, cooled overnight, and taken out water. The paddy is subsequently steamed, washed early in the next morning and taken out for drying. Drying parboiled rice is undertaken for three consecutive days in Garko centre. Polishing is achieved by double milling in the cluster. The parboiling method, length of drying, double milling are the major factors that make the quality of Garko rice high. A part of method could be applied to other rice centres to improve quality of milled rice.

Drying

Under the sun, parboiled rice is dried on a polythene sheet used as rice bag spread on the ground. Rice is turned by hands or a special tool every twenty to thirty minutes. The area used for drying is located within and outside the house hold. This process leads to collection of impurities into the paddy as the drying floor is not cemented and people and animals step on the paddy on their way into and out of the households. After drying about 8 hours, parboiled rice becomes dried enough to bring to milling places.

Milling

Milling is carried out by using diesel powered milling units. The engelburg type milling machine is used at any millers' factories. The machine does not separate husk and bran. The machine is made either in India or China. Single milling is a common processing method, therefore no polishing is conducted. Double milling for polishing is undertaken only there is a request by a paddy owner. Average cost of milling is NGN 300 per bag (75kg) of paddy at Kura rice centre. Additional NGN 100 per bag is charged for double milling.

(6) Issues identified

1) Government services

Not many respondents know about availability of business development services from governmental institutions. A service of Kano Agricultural and Rural Development Agency (KNARDA), which is a parastatal institution, was recognised by one of the enterprise owners. KNARDA is an agricultural extension agency that has branches in all 44 local governments in Kano State. Their main activities are to support farmers' activities through providing technical assistance and providing information. They support a variety of agricultural products, but their current focused commodities are rice, dairy products, and maize. They are planning to establish more organised rice clusters in Kura, Tudun Wada, Kwanar Dawaki, and Dawanau. More organised pilot processing sites and markets could be seen in the future.

Aside from questionnaire' results, several other governmental services are available for small and medium scale enterprises. The Kano State Ministry of Commerce, Industry, Cooperatives, and Tourism (KMCICT) provides interest-free loans to small and medium scale enterprises. NGN 150,000 to NGN 2 Million in funds are supposed to be available after borrowers pass an examination by a committee set by the Ministry. Repayment period is 28 months and many groundnut oil millers have taken loans in the past. The issue is that the funds are suspended currently.

SMEDAN facilitates MSMEs in accessing the Nigerian Economic Reconstruction Fund, and the fund is currently available. However, information about the fund is not well shared at the state level even among government officers. The information can be provided to enterprise owners in Kano State.

2) Management related issues

Operation cost of small and medium scale enterprises in the rice value chain has been increasing due to inflation in the costs of gasoline, water, Guinea corn stalk for parboiling, and labour cost in general. Enterprise owners think that their companies' operations have been difficult due to increase in operation costs even though trading volume of rice has generally increased.

As far as profit level is concerned, profits of parboilers are shown negative in the survey result. Profits are necessary to continue parboiling business. One of the leaders of parboilers mentioned that parboilers can make adjustments for making profits by raising their fees. Thus, actual figure for profit must be positive. This tells that it is difficult to memorise precise figures in the business transactions without keeping financial records. Almost none of the parboilers have received formal education. Therefore, providing support of bookkeeping knowledge to parboilers can help improve their business management skills.

Moreover, parboilers feel that there is not enough space for drying parboiled rice, which is a critical issue for them to produce high quality parboiled rice. Usually, parboilers use empty sacks on the ground. Often, parboiled rice is spread in their house yard for drying. Especially during the rainy season, it takes more time to dry parboiled rice. Even three major processing sites do not have well-equipped facilities shared among parboilers for drying rice. Quality of parboiling influences the quality of milled rice.

Considering cost increase of raw materials, fuel, and, labour, more efficient and cost effective business practice are inevitable to increase profits of owners of any type of enterprise. Many components of cost efficiency could be achieved with efforts of management. This aspect needs to be supported and enhanced during the pilot project period.

3) Technical Issues

Low yield

Average productivity of rice per hectare around Kura rice centre is from 15 to 40 75kg bags of paddy. A cause of low productivity in the Kura rice centre is lack of release of irrigation water on time and lack of inputs especially fertilizer.

Mixture of different varieties

The use of sickle to harvest paddy is a crude method and most of the dried paddy on the stalk normally falls off during harvest. Fallen paddy on the ground grows during next planting season. It leads to variety mixture of paddy. Current threshing, drying, storing method also cause mixtures of impurities such as stones and sand into paddy. Insufficient stone free ground for drying parboiled rice also causes mixture of impurities.

Low parboil fuel efficiency
Parboiling pot is placed on 70 to 80 cm-wide hole and the pot is supported by three or four stones. Guinea corn stalks are installed in the hole for heating. Amount of flame is too large because of too much air space under the pot. Consequently, by reducing air space, heat efficiency will be improved.

Drying method
As described in the section of employed technology and techniques, quality of parboiling affects on quality of milled rice. With current parboiling process, the following points need to be improved.

- Drying length is insufficient.
- Polythene sacks used for drying on bare floors which picks up impurities.
- Drying area is insufficient and it limits productivity and quality of parboiled rice.

Milling technology
There is no process of separating milling and husking. It leads to a mixture of husk and bran as bi-products. Currently, by-product is used as fuel for par-boilers. If husk and bran are separated, husk can be used as fuel by the par-boilers while bran could be used as an ingredient for poultry and fish feed. The Engelburg milling machine is not designed for separating these two processes and a different type of milling machine is required.

Retailing techniques
At markets, traders and retailers do not display rice varieties, processed areas and prices. Consumers have to ask traders or retailers to confirm these types of basic information. If traders make these types of information visible, traders and consumers become more sensitive on quality and varieties of rice. More appropriate price on different types of rice will be set at markets.

4) Market structure
As described in Source: Project Team
Figure 4-1, certain markets have stronger relations with certain processing sites. This means that consumers may not be able to find certain varieties or certain quality of rice at a particular market. Once a certain image is created by consumers toward a market, a certain type of consumer only goes to his or her favourite market. For traders and retailers, this hampers finding new consumers at a market. Also, if a trader deals with the same wholesale stores or retail stores all the time, this may discourage market competition and lower quality of rice.

As a physical market structure, considering geographical locations of rice centres, large scale interstate rice markets should be located in southern part of the state rather located in the northwest of the state. Currently, a main source of rice comes from Tudun Wada, which is further south of the state, and the market is located 45 minutes from Kano City. Thus, it takes a lot of time and cost for traders to deliver rice to the market. It would be more cost effective to operate wholesaling businesses in the southern part of the state or between the major rice centres and Kano City.

Sometimes no rice of appropriate quality is available at the markets. This situation is caused by mixing of different varieties, inadequate grading, low skills on processing, lack of information on available rice. All markets are independent and information about availability of rice is not shared among traders and retailers.

5) Associations and cooperatives
Each enterprise belongs to an association. There are different types of associations based on the type of business. For example, for rice millers, there are rice milling associations; for parboilers, there are parboilers' associations. Associations play an important role in supporting small and medium scale enterprises in Kano State, such as providing members' loan funds from the pooled membership fees.

Associations also provide business related information to members and help mediate disputes among enterprises. Although not much spontaneous cooperation had been conducted among the business enterprises, traders sometimes provide rice to other traders in the case where a trader's customer requests a specific type of rice and it is not available. Later, the trader which provided the particular kinds of rice is given a refund from the other trader who received the rice. Thus, spontaneous cooperation seems to be minimal in the private sector.

6) Infrastructure

At major rice centres, parboiling is undertaken at a parboiler's house yards or on the street, which causes mixture with stones and dust. This situation does not help improve quality of rice, because larger drying space could provide more time for parboilers to dry rice. Limited drying space also hinders production amounts. Also, there is not enough space for selling rice for each trader, especially in city-based markets. Shortage of appropriate storage facilities also gives traders fewer choices in formulating selling strategies.

In addition, currently, different clusters are gathered in certain rice centres, such as Kura, Tudun Wada, and Garko. However, parboilers, millers, and traders are not necessarily located in close proximity within a rice centre. As explained, parboilers do their business at their homes and they are sometimes a little far from millers and traders. If they could work in one place or more closely, they could improve productivity. Currently, there is not enough space for all the clusters to work in one area, even at the three major processing sites.

Moreover, roads across the state are not well maintained, particularly in rural areas. For example, rural roads have numerous potholes and most vehicles have to slow down to avoid damages to their cars and loads. It takes significant time away from traders to deliver rice to markets.

There are several irrigation schemes near rice fields, and many farmers receive benefits[6]. However, high cost of water raises the price of paddy rice and parts of the irrigation schemes have not functioned. If more water were provided at lower prices to farmers, it would reduce the price of paddy rice, which would lead to lowering prices of milled rice. Well planned provision of water is necessary to improve the condition of rice production and processing.

Furthermore, difficult access to city based markets, especially Savon Gari market, is an issue not only for consumers to purchase rice easily, but also for traders to load and unload a large amount of rice. The interstate market suffers from the same problem, which limits its functions.

4.1.3 Leather

(1) Current situation of Business Development Service Providers

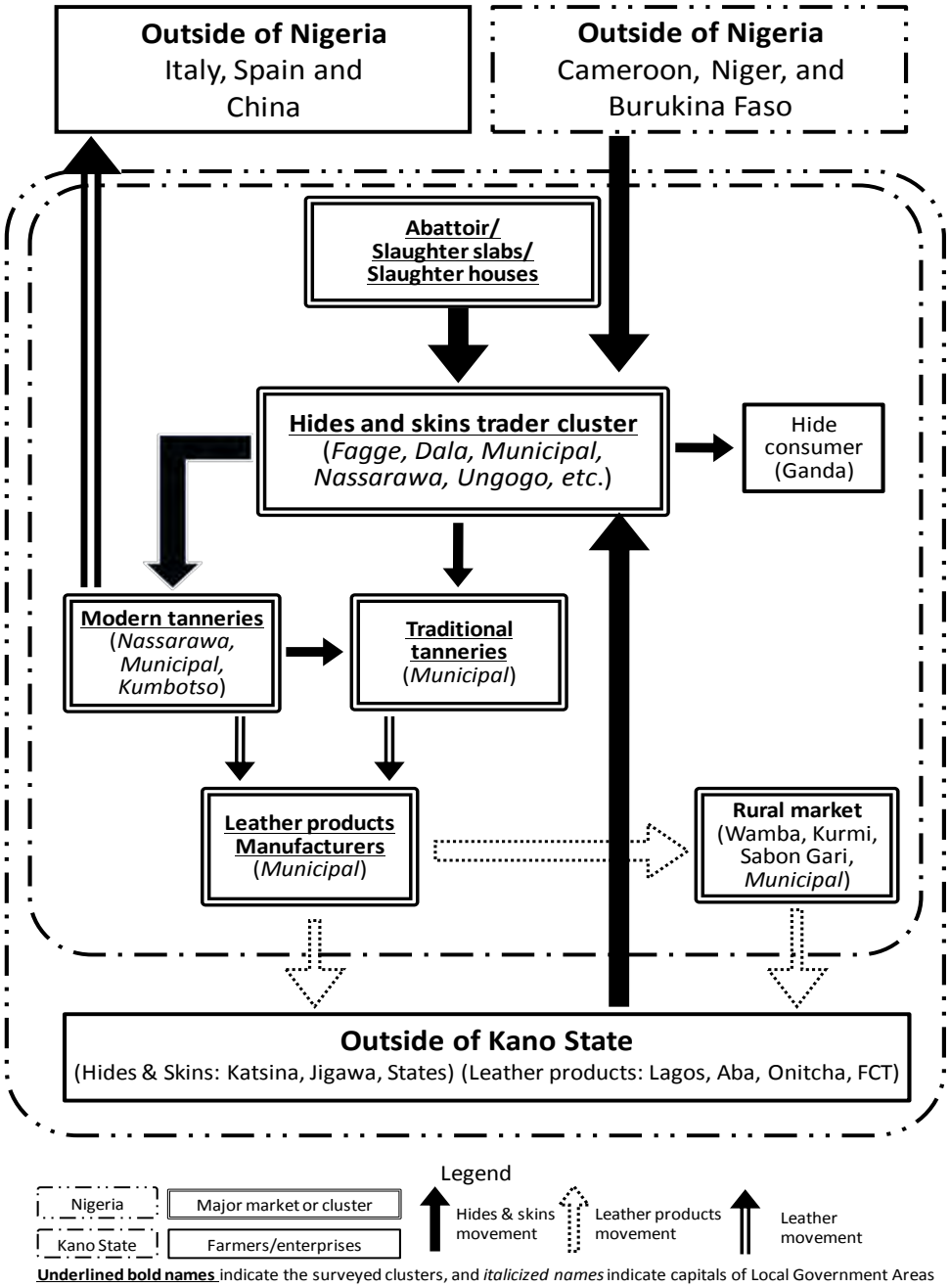
Federal College of Chemical and Leather Technology (CHELTECH) is recognised Business Development Service Provider (BDSP) available for the leather industry. CHELTECH is a leather research and development institute located in Zaria, Kaduna State. The focus areas of the institute are: 1) to undertake research and development programmes for the leather and allied industries, for the better utilisation of indigenous resources and skills, 2) to develop appropriate technology to suit local conditions and the micro, small, and large scale enterprises of the industry, 3) to disseminate technical knowledge to the industry, 4) to act as a clearing centre for technical information and technical consultancy, 5) to set up standard specifications for leather and related materials, and 6) to act as an advisor to the government on matters of policy, growth, and development of the leather industry. Since

[6] There is Tiga dam near Kura rice centre. There is Kano Irrigation Project, which stretches to five local governments around Kano rice centre.

Zaria is a two-hour drive from the centre of Kano, access to the resources of the institution is not difficult.

(2) Types of clusters and their characteristics

Five major clusters are identified in the value chain of the leather industry within Kano State: 1) abattoirs/slaughter houses/slaughter slabs; 2) trading agents dealing with hides and skins; 3) traditional tanneries; 4) modern tanneries; and 5) leather production manufacturers. The value chain flow chart is shown in Figure 4-4.



Source: Project Team

Figure 4-4 Structure of leather value chain in Kano State

The following section describes the above-mentioned clusters in greater detail based on the findings of value chain survey and on the focus group discussions conducted in the clusters.

1) Abattoirs/slaughter houses/slaughter slabs

Definitions of abattoirs, slaughter houses, and slaughter slabs are as follows:

- Abattoir: large-scale standardised slaughter place, which includes large facilities of cold storage, hanging rails with a hood, and sections for slaughtering, meat inspection, and administration. Water and electricity supply facilities are provided.
- Slaughter house: medium-sized facility, which includes hanging rails and a slaughtering section. Sources of water and electricity are provided. Located in the local government headquarters.
- Slaughter slabs: small slaughtering facility found in a local village. Usually only water source is available.

Slaughter houses exist in each LGA; however, as for registered facilities, no clear identification was available. According to Felsner (2010), Kano State has three registered abattoirs/slaughter houses/slaughter slabs: Kano Old Abattoir, Bachirawa Slaughter house, and Ladin-Makore slaughter house.

Established in 1966, Kano Old Abattoir is owned by Kano State Government and managed by a private company, with 85% ownership by the State Government and 15% ownership by the private company. Approximately 20 to 50 cows and 50 to 100 sheep and goats are slaughtered daily, while 300 to 500 cows, 2,000 sheep and goats, and 70 camels are abattoired daily. Roughly 300 butchers work in Kano Old Abattoir. Those who bring slaughtered animals are required to verify the quality and condition of the animals by showing a certificate issued by meat inspectors situated in each LGA. In other words, abattoirs make efforts to minimise the risk of dealing with low-quality slaughtered animals in the property area. Users of the Kano Old Abattoir are from not only Kano State, but also from neighbouring states such as Bauchi, Yobe, Jigawa, and Katsina to make up to around 10,000 people per day.

The distinction between hides and skins is made by the size and thickness of skin. Larger and heavier skins are categorised as hides, while smaller and lighter ones are categorised as skins. Skins of cows and camels are typically considered hides, while those of goat and sheep are considered skins. The annual numbers of inspected slaughters for hides and skins are as shown in the Table 4-5.

Table 4-5 The number of inspected slaughters

Year	Cattle	Sheep	Goats
2007	96,840	214,821	225,371
2008	97,900	98,371	280,000
2009	104,250	201,060	250,316

Source: Flesner (2010)

Currently, 15 state government officers work as inspectors for both ante- and post-mortems, which are carried out within the section by animal type. The facility utilisation fee is NGN 1,000 per head for cows and camels and NGN 100 per head for sheep and goats.

2) Trading agents dealing in hides and skins

The majority of trading agents are located in four LGAs in the centre of Kano: Fagge, Nassarawa, Ungogo, and Municipal. Some of the traders work as individuals while others work as trading agents. Trading agents are typically members of associations, which are registered under the state government.

After purchasing raw materials, traders salt the hides and skins and then preserve them in storage. Some traders communicate directly with traditional and modern tanneries while others work through dealers for modern tanneries.

The focus group discussion conducted with National Association of Hides and Skins Dealers revealed that more than 2,000 traders exist in Fagge LGA alone. Raw materials traded among the members of the association include both hide and skins, but the volume of the latter is much greater, since hides are usually costly and used for specific products such as horse riding saddles.

The hides and skins come from both inside and outside of Nigeria. The amount of imported skins has been increasing despite the quality being not as high as those coming from the northern part of the country such as Kano, Katsina, Jigawa, and Sokoto States. The quality of hides and skins from above-mentioned states is understood to be high because of: 1) superiority of species; 2) better nutrition of grass available to animals; 3) less ticks; and 4) better skills of butchers in removing skins from the animals.

Traders consider the animals from Kano, Katsina and Jigawa States to be first-ranked, those from Sokoto, Bauchi, and Adamawa States to be second-ranked, and those from countries such as Cameroon, Niger, and Burkina Faso to be third-ranked. Kano brown goats are considered to have the highest quality. Benefiting from their locality, skins of Kano brown goats usually have less knife cuts, owing to better skills of butchers and shorter preservation and transportation periods from the salting phase to the tannery phase. Although no official grading system exists, traders grade skins as first, second, third, or reject. Hides and skins graded as first through third are traded with modern tanneries, while those graded as reject are traded with traditional tanneries.

Another important factor that traders consider for the quality of hides and skins is transportation period. Better quality is promised with shorter transportation period. The transportation cost between the states is NGN 5 to 10 per sheep and NGN 3 to 5 per goat. The transportation system for importation from neighbouring states is simple. If a trader obtains hides and skins in Burkina Faso, the procedures to follow are as follows:

- Go to Burkina Faso by using public transportation (in most cases, traders hire transporters)
- Rent a truck(s) in Burkina Faso, purchase hides and skins, and load them onto trucks without salting preservation
- Move to the border of Burkina Faso and Niger, go through customs (load and unload the hides and skins), and change a truck(s).
- Move to the border of Nigeria and go through customs (load and unload the hides and skins)
- Move to the border to Kano State
- Move to Kano State to the city of Kano, such as Fagge LGA

This type of transportation takes five days on average. At each border, transporters fill out appropriate forms with quantity information and types of hides and skins and pay necessary fees: NGN 40 to 60 per skin is required depending on the total volume loaded onto a truck(s). The reason for use of multiple vehicles is related to cross-border changes in climate and road conditions. Once or twice a month, traders from Burkina Faso travel to Kano State to purchase good-quality skins, such as those of Kano brown goat, which are not available in Burkina Faso.

3) Traditional tanneries

Traditional tanneries are inherited family businesses, mostly located in the Municipal LGA, in the centre of Kano State. The number of traditional tanneries is decreasing due to the difficult business environment.

Within the central area of Kano, five clusters exist. Although 6 tanning pit facilities previously existed, currently only one tanning pit facility is found, in Kofar Wambai, Municipal LGA owned privately and managed by an association known as "Self-help." The association was established in 1980 and consists of 65 current members. Utilisation of the facility for tanning is simple: each enterprise is required to pay NGN 2 per sheep, goat, cow, or large size snake and NGN 0.5 per small size snake.

The hides and skins purchased by traditional tanneries are those graded as reject. Upon customers' request, traditional tanneries obtain high-quality hides and skins. Only a few traditional tanneries do business with modern tanneries: since modern tanneries do not have skills to tan naturally, special requests are made to traditional tanneries to tan. The majority of leather produced by traditional tanneries is sold to local leather product manufacturers; however, only a little leather is sold to European buyers, who have a long business relationship with specific traditional tanneries.

Various raw materials are used by traditional tanneries for tanning. Table 4-6 shows the names and prices of raw materials used for traditional tanning. The large amount of *Acacia nilotica pod* is especially used for the skins purchased by European buyers, while groundnut oil is occasionally applied to create a special shiny appearance while adding more quality to leathers.

Table 4-6 Names and prices of raw materials used for traditional tanning

Item name	Price range
Potash	• NGN 2,000/bag, 1bag=40bowls=1,000 skins
Cabide	• NGN 200/bag=200 skins
Pigeon manme	• NGN 1,500 to 2,000/bag, • 1bag=40 bowls=2,000 to 3,000 skins
Acacia nilotica pod	• NGN 1,200 to 1,500/bag, 1bag=40bowls
GroundnutGroundnut oil	• Price not available
Kaolin	• NGN 2,500 to 3,500/bag=2,000 skins

Source: Project Team

Table 4-7 Hides and skins purchased by modern tanneries from 2005 to 2009

Year	Hides	Sheep	Goats
2005	4,651	981,670	98,991
2006	6,168	640,781	430,760
2007	180,211	1,007,840	580,317
2008	65,400	2,142,390	523,500
2009	24,000	880,905	600,415

Source: Interview at Ministry of Agriculture and Natural Resources, Kano

4) Modern tanneries

The applicable definition of modern tanneries for this project is specifically tanneries that highly utilise modern machinery and fit into the category of large-scale enterprises in accordance with the definition set by SMEDAN. Twenty modern tanneries exist in Kano State, although not all of these tanneries are operating business activities at the same level. These enterprises are mainly in the Challawa, Sharada, and Bompai industrial estates, located in Kumbotso, Municipal, and Nasarrawa LGAs respectively. About 70% of the modern tanneries are located in Kumbotso.

As distinguished from traditional tanneries, modern tanneries do not belong to associations, but are members of Nigeria Tannery Council. Each modern tannery is independent, implicating strong competition among enterprises: some tanneries were established during the Colonial period while others have just started their business recently. The leathers produced by modern tanneries are mainly exported to European countries, such as Spain and Italy.

Powerful modern tanneries, including foreign-invested companies, have a strong influence on the market mechanism and entire value chain structure. The future of the leather industry is likely to be affected by their management and performance. Modern tanneries conduct large-scale operations. For example, the interviewed tannery has 400 personnel, who produce 8,000 pieces of leather daily, and 100% of the products are exported to countries such as Spain, Italy, and China, in a total of 3 containers of 20 square meters per month.

5) Leather-products manufacturers

Leather-products manufacturers are mainly located in Municipal LGA, a walking distance to the cluster of traditional tanneries, and close to Wambai market, where large amounts of leather products are sold. Most of the leathers are purchased from modern tanneries, although the leathers do not have sufficient quality for exportation. Some leathers are obtained from traditional tanneries when traditional leather crafts are produced. Some reasons why leathers from traditional tanneries are not purchased are: 1) lower quality; 2) additional time required to remove thin layers that are not peeled after the tanning process; and 3) less availability of colours and embossing. However, for the production of traditional design leather goods, leathers tanned by traditional tanneries are always preferred.

Shoes and bags are usually produced by assembly-line operation. For example, specialisation is evident among small manufacturers in the following areas of the shoe-making process: attachment of multiple soles with adhesive, sewing of outer leather portion, removal of excess sole and sewed rubber-sheet portion, stamping of official company seal, and final tanning to create a good fit to a person's foot. Each step takes place in the manufacturer's own space, which is four square meters on average and includes necessary machines, equipment, and one to three people.

(3) State-wide distribution of clusters and enterprises

Unlike the agricultural-related clusters, the clusters and related enterprises of the leather value chain are highly concentrated in LGAs such as Dala, Fagge, Municipal, Nassarawa, and Ungogo, although slaughter facilities are located in rural LGAs. This geographical concentration of the clusters is considered to be one of the reasons for heavy water pollution found in the Challawa River in the centre of Kano State (Akan, Ogugbuaja, and Reuben, 2009). Therefore, waste water control is urgently needed in this area, since it has a negative impact on those living in the metropolitan area.

(4) Characteristics of the Leather Tanning value chain

1) Enterprises and their management

Ranked 125th in the World Bank Doing Business statistics (2010), Nigeria needs to improve its business environment. The tax system in Nigeria is especially complicated and its period of procedure is remarkably longer than that in other countries. The result of value chain surveys conducted with trading agents, traditional tanneries, and leather product manufacturers show that 60% of them complained about the multi-tax system of 1) state government; 2) LGA; and 3) other governmental agencies. Some associations pay tax on behalf of members. Table 4-8 shows the types of taxes paid by the associations.

Table 4-8 Types of taxes

Name of the association	Types of taxes and amount
National Association of Hide & Skins Dealers (traders)[7]	• State revenue per enterprise: NGN 1,000/year • LGA revenue per enterprise: NGN 700/year • Nigeria Railway Cooperation: NGN 10,000 /year
Self Help Association (traditional tanneries)[8]	• State revenue as association: NGN 5,000 /year
Progressive Leather Handicraft Multi Purpose Cooperative Society Limited (leather product manufacturers)[9]	• LGA revenue per enterprise: NGN 600/year

Source: Project Team

According to Felsner (2010), export-oriented modern tanneries employ about 20,000 people on a regular basis only in Kano State and hire additional staff during, for example, Eid-kabir "Salla." The estimate for the number of direct and indirect employment of the entire value chain is close to one million. Roughly 8,000 people are engaged in traditional tanning clusters, which implies that the leather industries create a greater number of employment opportunities, thus contributing to GDP growth.

The leather industry is a relatively labour-intensive industry. Results of value chain analysis indicate that profits of 90% of trading agents are increasing while trading volume is also increasing. It is assumed that a greater number of staff is required in order to meet the demand and to expand their businesses: however, costs of labour, transportation, and several taxes prevent the MSMEs from doing so, since access to finance or credit is extremely difficult.

2) Production, distribution, and consumption channels

Since hides and skins are by-products of meat, the scale of the leather tanning value chain is highly affected by the volume of meat production. According to Felsner (2010), the quantity of livestock in Nigeria and Kano State is estimated as follows:

Table 4-9 Types and quantity of livestock

Types of livestock		Quantity	Annual production of hides and skins
Nigeria	Cattle	16 million	1.5 to 1.6 million
	Sheep	33 million	10 to 11.2 million
	Goats	52 million	18.2 to 19.7 million
Kano	Cattle	800,000	n/a
	Sheep	3.6 million	n/a
	Goats	8.4 million	n/a

Source: Felsner (2010)

Nigeria is endowed with the third largest livestock population in Africa. About 80 to 90% of leather is exported to Europe by modern tanneries, while 10 to 20% are supplied to domestic leather product manufacturers. Explicit market segmentation is found between modern and traditional tanneries. Finished leather products are sold in local markets: shoes and bags are sold in Wambai market, while

[7] Membership fee is 300 Naira for ordinary members and 1,000 Naira for executive board members per year.
[8] No membership fee collected.
[9] Membership fee is 100 Naira per week.

traditional design leather products are sold in Kurmi market. Some of the leather products are sold in Lagos, Abuja, and other states through retailers. Quality of the finished leather products is not high and the designs do not satisfy the customers in the international market. Therefore, exportation of finished leather products is difficult. Leather product manufacturers are thus likely better off having a business strategy to reduce processing costs so that their products can successfully compete with products made of rubber and synthetic leather.

3) Prices and trading volumes

Based on the results of the value chain survey, trading volume has been increasing over the last five years. Prices fluctuate depending on availability in the markets. Raw skins from Kano State and other neighbouring states are usually higher in cost – at an average of NGN 550 to 600 per sheep and NGN 400 to 420 per goat – than those from other countries such as Niger, Burkina Faso, and Cameroon.

According to the results of the focus group discussion conducted with traditional tanneries, 2,000 to 3,000 pieces of assorted skins per week are purchased when the market prices are reasonable, while 1,000 to 1,500 pieces of skins are purchased when market prices are high.

During Eid-kabir "Salla," the price of hides and skins decreases due to increased amount of livestock for the special religious occasion. The hides and skins available during this period are considered the highest in grade, since the majority of the animals have been well fattened. Skins made during this period are medium to large in size. Six million animals are estimated to be slaughtered in Kano State alone. Tanneries that need to store hides and skins purchase large amounts of raw materials, depending on financial capital.

Leather product manufacturers supply their finished products, such as 100% leather made male sandals, at the price of 1,000 to 2,000 to the retailers or directly to shop owners at markets. The price range for leather shoes and sandals sold in Wambai market is from NGN 600 to 4,000, depending on the type, volume, and quality. The cost of hides-leather purchased by manufacturers is NGN 250 per square meter for first grade and NGN 190 per square meter for other grades. The average cost of Kano brown goat skin-leather is NGN 1,300 per piece, which is considered expensive, but such leather is considered to be of the highest quality.

4) Financial and economic volumes

The leather industry in Nigeria is currently the second largest contributor to GDP in Nigeria, although the percentage of GDP share has been decreasing in the last few years (EME 2008). The leather industry accounted for about 0.6% of Kano State GDP in 2005 (EME 2008). The number of modern tanneries which export their leather is approximately 20 in Kano State. Nigeria's leather share in the global market is currently 3%, amounting to US$680 million. The majority of contribution to the share is from modern tanneries. In other words, the leather industry heavily depends on exportation. In 2006, the value of exports was US$83.2 million compared to that of US$1.59 million.

Traditional tanneries and leather product manufacturers are not export oriented businesses. The market size will be analysed based on the results of baseline survey conducted in the three clusters.

5) Employed technologies and techniques

According to the baseline study and value chain survey, there is no evidence that any trader, traditional tanneries, or leather product manufacturer uses large-scale equipment. Only the leather product manufacturers use equipment which requires electricity, but kinds of equipment, such as Chinese sewing machines and grinders, are limited.

The technology of the workers is passed on from experts to beginners through direct experience, so they don't go to school to obtain professional skills, nor do they have opportunities to attend training. Therefore, workers are poorly informed about the latest technologies and skills, and they don't think

there is much room for improvement in current product quality and technological levels. Moreover, the lack of quality standards for the products (fells & hides, leather, leather products) they handle leads to low awareness of the values of quality and improving product quality on a daily basis.

(5) Issues identified

1) Government services

No interventions by the state government are identified throughout the entire value chain. In relation to the enhancement of BDSPs, state government and LGAs need to provide appropriate public services. The following is a list of identified areas that require more governmental interventions:

- Enforcement of regulations
- Standardisation, including branding
- Infrastructural development to enhance environmental protection
- Service provision of access to finance

In the current leather market, the related regulations and standards are not followed properly. Before the Declaration of Independence, the regulations and standards of raw materials and leather products were properly followed by workers and stakeholders. The Hides and Skins Regulation of 1963, which addressed all activities related to hides and skins production and grading, preservation, inspection, and export licensing, is virtually ignored today. The interviewee of a modern tannery mentioned that more and more people without specialised knowledge on skins and leather have started the business, thus leading to a collapse of the market mechanism in terms of grading and inspection.

As mentioned in the previous section, the current grading system is not well documented, but is generally understood among stakeholders (Felsner, 2010).

- First grade: skins are symmetrical in shape, no knife damage seen on any part of the skin. Clean, properly cured, and free of hair slip.
- Second grade: skins have good uniform shape, one slight flay cut is tolerated if not more than four fingers breadth away from the edge.
- Third grade: skins are irregular in shape, showing more than two flay cuts but not in the centre portion. Well preserved, slight hair slip.
- Rejection: skins not suitable for processing into quality leather by modern tanneries.

In the absence of a grading and collection system, the overall qualities of raw materials require improvement. A rough estimate is given that around 8 to 10% of the total sheep and goat skins produced – equivalent to 2.5 to 3 million skins per year – do not enter the recorded trade channels. Existence of an official grading system could help prevent this huge loss. A grading system and its widespread application, from the cluster of abattoir/slaughter house/slaughter slabs to leather product manufacturers, would contribute to GDP growth of the entire leather value chain (Felsner, 2010).

Enhancement of service provisions for access to finance is another important issue, since most of the enterprises seek assistance from the state government. Although several commercial banks are located in Kano State, the majority of them are not friendly lenders to MSMEs in terms of their high interest rates, usually more than 10% per year, and collateral requirement. Since challenges exist for MSMEs to directly access commercial banks, the presence of NRCRDB, micro-finance institutions, and Nigerian Agricultural, Co-operative, and Rural Development Bank is crucial for MSMEs.

2) Management-related issues

Management skills of MSMEs involving in the leather industry are fairly poor, except for those of modern tanneries; however, some issues still need to be addressed by modern tanneries. Characteristics of the management of MSMEs found in the value chain are: 1) no application of

bookkeeping method, 2) recent increase in profit, 3) having perception of business strategy by 50% of MSMEs, 4) participation in technical and/or management training by 60% of MSMEs, and 5) having willingness to receive training by 70% of MSMEs.

None of the MSMEs interviewed use the bookkeeping method for their management. Questions regarding trading volumes, prices, and profits were answered without reference to written documents, but through recollections of the interviewees who manage their enterprises. Thus, it can be concluded that the bookkeeping method, once adopted by MSMEs, will certainly contribute to improvement of their business management and profitability.

UNIDO has provided training courses regarding salting and preservation methods. As for SMEDAN and other BDSPs, none of service provisions regarding business management and improvement of technical skills were found in the questionnaires. Seventy% of interviewees, including participants of UNIDO training courses, expressed their willingness to even pay some fees to acquire new skills and techniques that benefit their business management. Therefore, it is recommended that BSDPs mobilise available technical resources at already-existing organisations to meet such MSMEs' training demand.

As mentioned in the previous section, the leather industry is relatively labour intensive. Thus, high cost of human resources is one of the bottlenecks of business management. For example, an average enterprise of trading agents consists of 2 to 3 staff members and extra staff is hired for salting purpose when necessary. In order to apply salt to 2,000 pieces of skins, 2 to 3 staff members are required. The average salary of permanent staff is NGN 650 per day while the salary of temporary staff for salting is NGN 20 per unit for any type of skin. In addition to labour cost, the cost of salt is high in the case of trading agents: about NGN 2,100 per bag (50 kg) for 70 goat skins or for 40 sheep skins. The amount of applied salt differs depending on skin quality and preservation period.

3) Technical issues

Traditional tanneries have technological difficulties with tannage. They use simple tools rather than machines to tan. The first process is to put a hide on a large stone (rock), then roll a relatively heavy stick on the surface of hide while leaning on it, in order to scrape off inner membranes and remaining meat. Simultaneously with this work, they spread the hide to make it as symmetric as possible, and make it uniformly larger. Since the stone surface used as a foundation is often irregular, it's somewhat common to make holes during this work process, lowering the quality and value of the leather.

Because the biggest factor for pricing is the size of the leather, this is the essential process to perform carefully to add product value. If workers can use a smooth-surfaced stone as a foundation, and tan to uniform thickness, they can greatly improve product quality and value. Furthermore, if workers pay more attention to the final product formation by stretching the leather before drying, which is the last process, they can increase the quality and value.

Leather product manufacturers mainly produce men's shoes, sandals, and bags, but the quality of those is not uniform. Some shoes and sandals have adhesives remaining at joints of the leather on their heels and soles, and sewing of some bags is spotty. Therefore, few products have a beautiful finish. Manufacturers can improve their product quality by processing and sewing with greater attention to detail.

4) Market structure

Market price is decided by the traders depending on the availability of raw materials in the market. The current market structure is largely affected by the poor enforcement of the regulations and standards for the leather industry and its products. Since the license regulations are virtually ignored, traders from neighbouring countries come into Nigeria to trade hides and skins while local traders seek hides and skins from outside of Nigeria, such as Cameroon, Burkina Faso, Niger, etc. to meet existing market demands without public sector control. Although the reputation for Kano brown goat is still

maintained among the traders, origins of skins are untraceable, market prices fluctuate widely, and intellectual and branding rights are not appreciated Enforcement of official standards of hides and skins would benefit the entire value chain to stabilise products' quality and price correspondence, and to secure fair trade practices.

On the other hand, the prices of leather products in the market are largely controlled by retailers or traders of the products. Leather product manufactures usually do not pay much attention to the market price of their own products. Therefore, there is opportunity for the manufacturers to compete with the retailers and increase profit by paying more attention to market trends and prices to plan and implement business strategies.

5) Associations and cooperatives

Associations exist in the traditional clusters, but modern tanneries do not form associations. The functions of the associations are providing marketing information, conflict resolution among members, enhancement of collaborative management such as transportation-cost sharing, and tax reduction related lobbying and advocacy activities to the state government and LGAs. Associations consolidate members' requests, and channel them to the respected state government ministries. For example, the Chairman of the trader's association in Fagge LGA, who is also a board member of the Kano State Urban Planning and Development Authority (KNUPDA), requested improvement of public market facilities to increase efficiency of businesses of association members.

Members of association do not constitute the majority of enterprises in each cluster, since informal businesses are ineligible for association memberships. The associations have been working efficiently and providing services which the members perceive satisfactory. One of the major constraints of MSMEs in the leather value chain is access to finance. Usually commercial banks and NACRDB prefer lending money to groups rather than individuals, and advise them to form such groups. It is recommended that Kano Chamber of Commerce and Industry, NASSI, and the Kano Ministry of Commerce, Industry, Co-Operatives and Tourism encourage those who are working in the informal sector to form groups and register as associations, while reforming the tax system, which seems to hinder development of the leather value chain.

Table 4-10 Environment and pollution issues identified in clusters

Issues identified	Related clusters
Chemical contamination of water	Traditional tanneries, modern tanneries
Poor segregation of waste and final leather products at processing sites	Abattoir/slaughter houses/slaughter slabs, trading agents, traditional tanneries, leather product manufacturers
Poor working conditions: working long hours in a closed environment with the chemicals without ventilation	Leather product manufacturers
Strong odour	Abattoir/slaughter houses/slaughter slabs, trading agents, traditional tanneries, leather product manufacturers

Source: Project Team

6) Environment and pollution

Pollution is a serious problem in leather industry. Table 4-10 summarises the industry's environment and pollution issues. UNIDO (n.d) is supporting the Programme to introduce cleaner production and pollution control systems, such as a common effluent treatment plant for tannery clusters in Kano. The programme assists tanneries with implementation and demonstration of cleaner technology, water

management, solid waste management, and operation of pre-treatment plans, as well as establishment of Common Effluent Treatment Plant and Common Facility Centre (CFC) for leather product processing. The pilot project can be designed in collaboration with this UNIDO supported program.

4.1.4 Groundnut

(1) Current situation of Business Development Service Providers

Access to business development service (BDSs), such as training on bookkeeping and accounting, marketing, and technical skills is limited, and the availability of such services is not well publicised. NASSI, KNARDA, KTIC, and Nigerian Reconstruction Fund are the candidate BDSPs which should be able to support MSMEs engaged in groundnut oil processing.

(2) Characteristics of business types

1) Raw groundnut trader

Unshelled groundnuts are traded as raw groundnut by traders in Tafawa Balewa of Kano City and Dawanau market, which is the largest grain market in the West Africa. These two markets are the major trading centres of raw groundnut in the Kano State. There is one association at each market. Thus, it is considered that there is one raw groundnut cluster each at these markets.

The baseline and value chain surveys were conducted against these two clusters. At Tafawa Balewa, twelve raw groundnut traders were interviewed for baseline surveys and three traders were interviewed for value chain surveys. At Dawanau market, five traders were interviewed for baseline and three traders were interviewed for value chain surveys. For the baseline surveys, about twenty percent of the total target population was randomly selected and this rule applies to baseline surveys.

2) Traditional oil processing cluster

Extraction of oil from raw groundnut is a mandatory process to acquire groundnut oil. Two types of groundnut oil processors are identified; one practices a traditional method and the other utilizes a modern machine. Traditional oil processors extract oil manually. Crushing of groundnut shells is done by a machine, but the machine is owned by a miller. There are a few millers in one village and they provide milling service with fees. Traditional oil processors use a service of crushing shells of raw groundnuts.

Traditional oil processors are located in rural villages and operate their businesses at home. Those villages are concentrated in the north, Tumfafi, Dawanau Town, and other small villages in Dawakin Tofa local government areas. Two sites, Tumfafi and Dawanau Towns, were selected as major traditional processing centres even though no associations exist in these two sites.

Dawanau town is about forty minutes and Tumfafi is about forty-five minutes from Kano City. Tumfafi is about a five-minute drive from the interstate wholesale grain market, Dawanau market. Five oil processors were randomly selected for baseline surveys in Tumfafi traditional oil processing cluster. Three oil processors were also selected for value chain survey at the same cluster. Eight traditional processors were chosen for baseline survey and one processor was interviewed for value chain survey at Dawanau Town traditional oil processing cluster.

3) Mechanical oil processing cluster

There are large-scale mechanical oil processing enterprises and small and medium[10] mechanical oil processing enterprises. MSMEs are the focus of this Study. Therefore, in this report, mechanical oil

[10] SMEDAN defines enterprises smaller than ten employees as small scale and those with smaller than 49 employees as medium scale. The Study follows SMEDAN's definition.

processor means small and medium enterprises. This type of oil processor uses a milling machine for crushing shells of raw groundnut and extraction of oil. They are located within the Kano metropolis, there are two industrial areas where many mechanical oil processors are located. One area is called Sharada Industrial Area and the other one is called Dataka Bus Stop Small-Scale Industrial area.

Thus, the study chose Sharada oil processing site, which is operating business longer months to conduct surveys. Twelve mechanical processors of Sharada were selected randomly and a baseline survey was conducted. Value chain surveys were conducted to three processors. At Dakata Industrial Area, one baseline survey and one value chain survey were conducted to see a difference from Sharada mechanical processing cluster.

4) Traditional oil trader (bulking agent)

In a rural setting, after extracting oil, oil traders visit traditional oil processors. They are also called bulking agents and they pick up oil to sell for larger traders at a market. In Tumfafi's case, these oil traders go to the interstate grain market to sell oil. These traders are usually female and live in the same village. Because of significant numbers of traders in Tumfafi, this site is selected as one of the survey sites. Five traditional oil traders were randomly chosen for baseline survey and one value chain survey was conducted at this site.

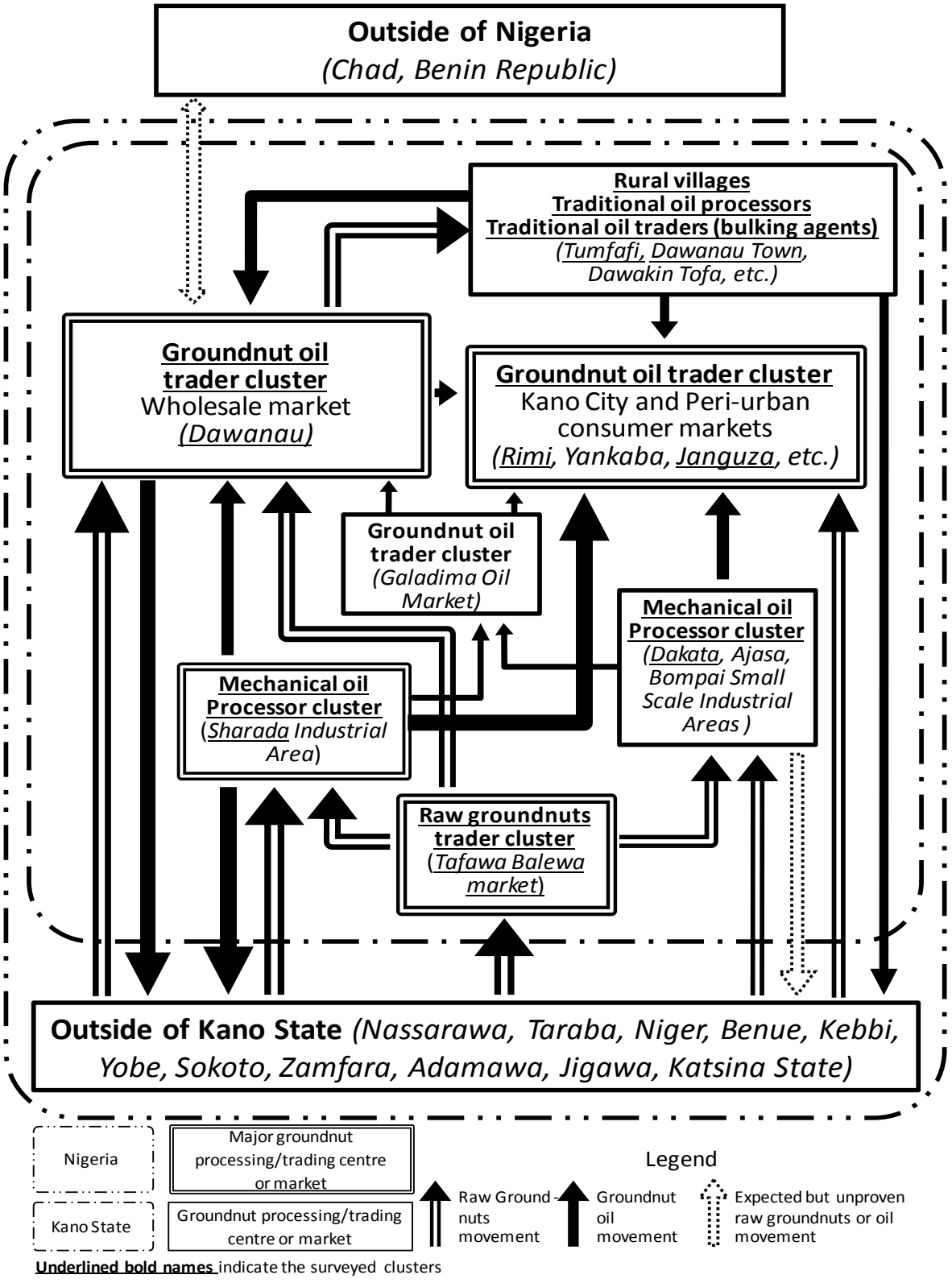
5) Modern oil trader

Modern oil traders purchase groundnut oil from mechanical oil processors. They sell oil at Kano City based markets such as Rimi market and Galadima oil market. Rimi market is a city based retail and wholesale market and Galadima oil market deals all types of vegetable oils, groundnut oil, soybean, cotton seed, palm oil, etc. Modern oil traders generally buy a larger quantity of oil than traditional oil traders.

There is an association called Vegetable Oil Traders Society at Rimi market. Thus, Rimi market is chosen as a target site for survey and the existing association is considered to be a cluster. Total members are thirty five, and seven baselines and three value chain survey were conducted at Rimi market. On the contrary, Galadima oil market did not deal at all with groundnut oil in an off peak season. Brief interview with a trader at the market revealed that a trading volume of groundnut oil has decreased drastically and it was judged that this market is not an important trading point. Thus, regular baseline and value chain survey were not undertaken at Galadima oil market.

6) Consumers

All households can be consumers of groundnut oil, but major consuming areas are urban areas and Kano City. Groundnut oil is sold at different markets and it is sold in a recycled liquor bottle or small plastic bag. One Kano City based market and one peri-urban rural type market were selected, Rimi market and Janguza market, to conduct consumer preference surveys. Surveys were undertaken near retail stores where groundnut oil is sold and twenty consumers were interviewed (ten consumers in each market).



Source: Project Team

Figure 4-5 Structure of groundnut oil value chain in Kano State

Table 4-11 Location and type of clusters under groundnut oil value chain

Name of association/location	Cluster type	Number of enterprises				% to Total			
		Raw trader	Oil processor	Oil trader	Total	Raw trader	Oil processor	Oil trader	Total
1.Association at Dakata Industrial Area	Mechanical [1]	0	27	0	27	0%	100%	0%	100%
2. Dawanau Market		-	0	11	11	11%	0%	11%	-
3. Dawanau Town	Mechanical [1]	0	20	24	44	0%	45%	54%	100%
4. Galadima Oil Market		0	0	25	25	0%	0%	100%	100%
5. Tafawa Balewa		60	0	0	60	100%	0%	0%	100%
6. Tumfafi village	Traditional[2]	0	23	22	45	0%	51%	49%	100%
7.Association at Sharada Industrial Area	Mechanical[2]	0	60	0	60	0%	100%	0%	100%
8. Rimi Market		0	0	35	35	0%	0%	100%	100%
Total		60	130	117	307	20%	42%	38%	100%

Note: 1) Mechanical oil processors use machine for milling and an oil extraction process. 2) Traditional oil processors do not use a machine for the oil extraction process.
Source: Project Team

(3) Characteristics of groundnut oil value chains in Kano State

There are several key sites and markets for groundnut oil value chains in Kano State. The majority of raw groundnut come from outside states and most raw groundnut are purchased by modern mechanized oil processors. There are oil processors who employ a traditional method in rural areas. Traditional oil traders work only for them. Consequently, the value chains are split into two lines such as a traditional processing line and a modern mechanical processing line.

1) Raw groundnut trading

Kano used to be one of the major groundnut producing states, but currently, only a very few farmers produce groundnut in the Kano State. In the 1980's, groundnut farmers shifted their commodities to other cash crops such as rice and sorghum because of high production cost and low profitability of groundnut.

Traditional oil extractors buy raw groundnut from local farmers, but production volume of groundnut is insufficient to meet the entire needs in Kano State. The insufficient local supply of raw groundnut leads to an inflow of raw groundnut from outside states such as Nassarawa, Taraba, Niger, Benue, Kebbi, Yobe, Sokoto, Zampara, and Adamawa. These states are located from the middle east to the upper middle west belt in the country. Especially, quantities of raw groundnut from Nassarawa, Taraba, and Niger are larger than those from other raw groundnut producing states. In terms of seasonality of raw groundnut supply, a peak period usually continues from August to November.

Raw groundnuts are brought either to Dawanau interstate market or Kano City based market directly from other states. Otherwise, raw groundnut traders of Kano City are usually stationed around Tafawa Balewa road with large tracks to bring bulk of raw groundnuts to their customers at markets.

Sixty raw groundnut traders at Tafawa Balewa belong to an association. Only a few traders have offices and most of them conduct their business by using mobile telephones and their tracks. Their customers know specific traders' phone numbers and they do not necessarily have to have offices, since they procure raw groundnuts on a demand basis. Traders are all males and aged between 40 and 50 years old.

Mechanical processors (small and large) are the major buyers of raw groundnuts. Traders from other localities within Kano and other states such as Jigawa and Katsina are also another category of important buyers and such traders procure the materials from Dawanau, and in turn sell to rural traditional processors in their respective states. However, in the case of the state of Kano, traditional oil processors do not buy raw materials directly from raw groundnut traders of Tafawa Balewa.

Traders in Tafawa Balewa use a weighing scale to measure and sell groundnut in kilograms. One ton is about nine bags of raw groundnuts. On the other hand, a scale is not used at Dawanau interstate market. They count merchandise with a number of bags. Mechanical oil processors prefer to buy raw groundnuts at Tafawa Balewa because quantities are more accurate.

Three types of groundnut varieties are available in the market; the first one is called Yar-Dakar and it is mostly procured from Niger State and this variety is the most preferred among processors because of its higher oil content than other varieties; the second variety is called Mai Bargo, which is the second best choice for processors and is brought from the republic of Benin. The third one is called Yar-Hausa, which is less preferred among processors because of its low oil contain and difficulty in processing due to its hard skin. They are sold at the same or in a similar price at markets in Kano State. Yar Dakar is more available at the market.

Raw groundnuts are from outside the state and there are two major trading sites, Tafawa Balewa and Dawanau. Buyers for the former one are mechanical processors. The latter one deals with various clusters such as traditional processors and mechanical processors. Each trading site has different methods in measuring volume. Raw groundnut are available throughout the year, but they become expensive during the off peak period.

2) Traditional processing sites

Oil processing business became popular among women in northern villages of Kano State about 30 years ago. This was because more raw groundnuts became available at markets. Dawakin Tofa LGA has been the largest groundnut oil producing area with the traditional method. It has approximately 2,000 traditional oil processors and traders are operating their business in this area.

Oil processing business is managed by rural women who are mostly married and middle aged. An estimated 60% of married women (within the age range of 20 to 40 years) in most of the villages and towns are involved in the traditional groundnut oil processing sub-sector, and two hundred women are currently involved with oil extraction in Tumfafi village. This can be translated that there are a thousand traditional groundnut processing enterprises in the LGA. Total numbers of traditional oil extractor have been increasing and about one hundred fifty more women started doing this business in this past five years. A similar tendency could be seen in other rural LGAs located near Kano City.

The processors in Tumfafi village sourced their groundnut seed mainly from the raw groundnut seed traders in the Dawanau market on a weekly basis or as the need may arise. Traditional oil processors rely heavily on credit sales to local traders, local restaurants, bakeries, and road-side vendors. About 12,000 to 14,000 jerry cans (20 litres each) are sold each day to retailers and consumers within Kano, other states, and neighbouring countries. Consumption of oil is by household, and most households buy in units of a half to a quarter litre. Oil is delivered mostly on credit from the traders to the market dealers who deliver to retailers on a cash-and-carry basis. In terms of quality of raw materials procurement, processors believe that quality of their oil is good because it meets customers' expectations.

Traditional oil processors produce a cake after extracting oil. They cut and roll groundnut dough into small pieces, and fry the pieces of dough with groundnut oil. These cakes are sold for NGN 43,000 per ton. With one ton of groundnut cake, a half ton of cake can be made. There are middlemen who sell cakes in a market for human consumption or for animal feed such as a poultry farm. Used oil for the

cakes is sold in a market and consumers prefer the aroma and the taste of used oil. Thus, production of a cake can generate a profit for traditional oil traders. In addition to cakes, if a cake is not in dried condition, it can be sold to traditional meat processors where it is used for making roasted meat known as "Tsire" and dry meat known as "Kilishi."

A typical traditional groundnut processor is generally resource-poor, lacks access to capital, has inadequate or no access to credit and other financial services, and uses technologies that are mostly inappropriate and inefficient with low profit margins while their operations are sub-optimal. They also lack the basic skills and awareness of simple record keeping and accounting. They operate their business with simple estimations of transactions. They indicate their willingness to receive free basic bookkeeping and accounting training to acquire and use the skills to improve their business performances. They also emphasise the need for technical skills in areas of processing technology.

The ratio of oil processed by the traditional processors to the total volume of processed groundnut oil in the state is small, but traditionally processed oil is more favoured by consumers due to its aroma and taste. Since traditional oil processing is one of the major means to support rural economy, supporting traditional oil processors has a significant meaning.

3) Mechanical oil processing sites

Groundnut oil processing enterprises are widespread across Kano City, and Sharada Industrial Area and Dakata Industrial Area are two major areas where mechanical oil processors are located. There are mechanical oil associations in each area. Even though all the mechanical oil processing enterprises belong to either one of the associations, some of the members are located at different parts of the city, such as the Ajasa and Bompai areas.

A majority of the small scale industrial oil mills operate at below installed capacity. The industry is a significant contributor to the groundnut value chain. As of the end of year 2008, Kano State had about 300 registered small groundnut processors. There are several large-scale mechanical oil processors in Kano City, which are out of scope under this scheme. Both large and small scale processors are all major buyers of raw groundnuts.

The processors procure their raw materials from traders in Tafawa Balewa market, and Dawanau interstate market. Bigger operators may go to major producing markets in Zamfara and Niger State to procure the raw materials directly. They mostly buy in tons and a ton of groundnut seed is equivalent to 9 bags (40 to 50 Tiya per bag). They prefer Tafawa Balewa over Dawanau interstate market. Raw groundnut are sold in kilos at Tafawa Balewa market and it is sold in bags at Dawanau market. Sometimes, bags are smaller than they are supposed to be and this is the main reason why mechanical processors prefer Tafawa Balewa market.

In the case of Sharada mechanical processing site, the processors change a source of raw groundnut oil seasonally as the Table 4-12shows. Raw materials from Benue and Taraba States are considered to be the best.

Table 4-12 Sources of raw groundnut of mechanical oil processors at Sharada Industrial Area

	Months	Names of States
1	January to August	Benue and Taraba
2	September to October	Nassarawa, Niger, Kaduna
3	November to December	Sokoto, Zamfara, and Adamawa

Source: Project Team

In terms of quantity, the small scale enterprises provide a significant quantity of groundnut oil in the market in comparison to the traditional processors. However, presently most of the small and medium scale groundnut oil mills operate at sub-optimal capacity usually processing only about one ton per day (about 4.5 drums of oil and 0.5 ton of cake) and factories operate for seven months, August to February, during the year. For example, Dakata industrial area was not operating groundnut oil business when Project Team visited them in the middle of July, 2010 because of a limited availability of raw groundnuts. This is affected by high price of the raw materials and higher operating costs than remaining months in a year.

4) Kano City based markets and other retailers

There are several Kano City based markets selling groundnut oil. Traditional oil traders take oil to city based markets or to peri-urban areas such as Rimi, Dawanau, Yankaba, and Janguza markets. Traders sell oil to Kano City based restaurants, bakeries, food venders, and households. Rimi market deals with the largest trading volume and numbers of traders on groundnut oil in Kano City. In Rimi market, there are about thirty five groundnut oil traders and they also sell other types of oil. All of the traders at Rimi market belong to a traders' association. However, some members claim that it is not well functioning to support the members' businesses.

The main sources of groundnut oil for oil traders in Kano State are Kano City base mechanical oil processors, Dawanau interstate market, and Galadima oil market. These oil traders have retail stores at the market. Trading volume and quality of oil have been increasing and improving in these past five years. However, their expectations in trading volume for the future indicate stability, but no improvement due to higher raw material cost and transportation cost. The price of groundnut oil is also expected to be raised.

Groundnut oil enterprises hire from 1 to 3 people, and 50 to 70 % of their entire trade is undertaken on a credit basis. They do not feel problems and constraints other than lack of capital and difficulty in access to financial institutions to expand their business scales. There is no support system to solve their issues or to improve their business skills among traders. They need assistance for skill improvement for better packaging of their merchandise.

5) Interstate wholesale grain market, Dawanau market

Dawanau interstate market sells raw groundnuts and traditionally processed groundnut oil and mechanically processed groundnut oil. Raw groundnuts come from outside the state and from some foreign countries. Traditionally processed groundnut oil is brought from neighbouring villages such as Tumfafi and Dawanau Town. Mechanically processed oil is bought at Dawanau Town where mechanical processors are located. As far as raw groundnuts are concerned, traders from Kano City purchase and sell to retailers. Traders from outside states such as Jigawa and Katsina also buy raw groundnut and sell them in their own states.

Traditional processors at Tumfafi and mechanical oil processors at Dawanau Town purchase raw groundnuts for processing. Processed oil is delivered to Dawanau market, where it is purchased by local residents and buyers from outside states. Traders from Kano City based markets also purchase groundnut oil.

Trader for traditionally extracted oil sells oil at Dawanau market and it is packaged in a recycled bottle. One bottle costs NGN 250 and their commission is NGN 15 per bottle. In the case of traditional oil processing site, Tumfafi, each oil processor deals with one or two oil traders. Oil traders who deal with traditional oil processors are either elderly, or young unmarried women who are mostly under the age of 14 years old. Thirty to 70% of their business is carried out on a credit basis.

6) Galadima oil market

Galadima oil market is an exclusive oil market located in Kano City. A total of about twenty five large scale dealers supply vegetable oil in large quantity to the market. About 80% of oil is purchased from large mills and the remaining 20% is supplemented by small oil mills. A size of a drum is 220 litres. When a trader buys oil from large mills, traders use 33,000 litre tanker loads and supply to about 40 smaller dealers – who, in turn, supply to an estimated 1,800 retailers in 20 litre jerry cans for sale to consuming households and individuals. The retailers sell in smaller units, variously in 4 litre, half litre, and 1/4 litre containers, depending on consumers' demands.

The oil trading business is dominated by young men; about 1,800 traders who purchase oil at Galadima market sell oil at markets and other retail stores. An average of four tanker loads of oil is supplied to Galadima market each day, in addition to the supplement from small oil millers. However, traditional groundnut processors have no access to this market.

(4) Characteristics of traditional oil processing centres and mechanical oil processing centres

1) Enterprises and their management

Size of enterprise in traditional oil processing site and mechanical oil processing site

A typical groundnut trader in Dawanau employs between 5 and 10 workers. Mechanical oil processing enterprises employ 2 to 20 staff members depending on their business size. Enterprises at Sharada mechanical processing site employ larger numbers of staff compare to other mechanical processing sites, such as Dawanau Town and Dakata industrial area. Most of their staff is temporary and only a few full-time employees are found. Oil processing enterprises avoid employing too many full-time staff, due to a change in availability of affordable groundnut during the off peak season.

The number of enterprises

Traditional oil processors: In Tumfafi oil processing site, there are about 200 people who are engaged in traditional oil processing. In the northern region, it is estimated that there are about 2,000 traditional oil processors in Kano State. About 20% of traditional oil processors have to stop extracting work during the off peak season in Tumfafi. Most of these oil extractors operate food vending business during the off peak season and some of them stop working completely in this period. They change their business to adjust to market needs and availability of raw materials.

Mechanical oil processing: The total number of mechanical processors is on the increase, about 25% annually, but in the future it will stay about the same, at 60, or decrease due to the world economic recession and price increase of raw groundnut materials. There are other mechanical oil processors at other locations. Although situations in other areas are not certain, it can be concluded that the total number of mechanical oil processors at these two industrial areas has decreased since last year. This is because of increase in raw groundnut price and other operation cost.

Table 4-13 Total numbers of mechanical oil processors by industrial areas

	Area name	Number last year	Number this year
1	Sharada Industrial Area	60	60
2	Dakata Industrial Area	35	27
	Total number	96	87

Source: Project Team

Registration
There are a few enterprises registered with the government. The main reason is that they do not have appropriate knowledge of registration and some enterprise owners feel that it is unnecessary to do so. However, a trader's association of Dawanau interstate market is registered with the government.

Employee's salary
All types of enterprise pay salary to their employees on a monthly basis, except oil traders at Dawanau interstate oil market. A typical groundnut oil trader in Dawanau interstate grain market is paid daily based on the services he provides. Salary amount differs between an owner of enterprise and their staff. Some example of salary ranges are summarized in Table 4-14. Mechanical oil processors apparently earn more income than traditional ones, for both owners and labourers. This is because of different processing volumes.

Table 4-14 Salary range of oil traders by markets

	Position and type of enterprises	Monthly salary range
1	Owner of oil trader at Rimi market	NGN 20,000 to NGN 40,000
2	Staff of oil trader at Rimi market	NGN 8,000 to NGN 15,000
3	Staff of oil trader at Dawanau interstate market	NGN 8,800 to NGN 33,000
4	Owner of mechanical oil processor at Sharada	NGN 16,000 to NGN 60,000
5	Labourer of mechanical oil processors at Sharada	NGN 7,000 to NGN 16,000
6	Owner of traditional oil processor at Tumfafi	NGN 1,400 to NGN 18,000
7	Labourer of traditional oil processor at Tumfafi	NGN 600 to NGN 3,000

Source: Project Team

Decision making system
Decisions regarding investments, procurement, and sales are usually made by the owner of the enterprise; employees may give some inputs in the decision making process but final choice and responsibility is vested with an employer.

Accounting system
Neither mechanical nor traditional oil processors keep records in a systematic manner, but they have their own methods of transaction estimations. Traders also do not keep records of their transactions. All involved enterprise owners indicate their willingness and interest in receiving services that will build their capacity in terms of efficient business management and marketing.

Human resource management
A typical traditional processor employs on a casual basis between 4 to 6 workers who are assigned different tasks ranging from cleaning of the raw seeds to oil extraction. The workers are paid on a daily basis depending on the amount of production per day, and most of the processors give their workers some quantity of cake and oil on a regular basis as extra benefits in addition to the daily wages. Oil trading enterprise owners provide some benefits to their employees. Some additional incentives such as clothing and housing are provided to the employees. An enterprise owner built a house for each of his two employees as an additional incentive, which probably is a rare case as enterprise welfare.

Marketing strategy
Oil traders used to purchase groundnut oil from mechanical processors in the Kano City area, but about four years ago, retailers started buying groundnut oil directly from mechanical oil processors. With the current marketing strategy, both clusters, retailers and mechanical oil processors, can make more profits than the former value chain. Some mechanical oil processors also go directly to other

states to buy raw materials. These methods reduce costs and bring higher profit ratios to involved stakeholders.

Claim management
If mechanical oil processors receive any complaints from oil traders, they promptly change low quality oil without any charge. Oil traders mentioned that they have not had any claims from their customers. In the groundnut oil business, changing low quality products to better ones is the business modality in Kano State.

2) Production, distribution, and consumption channels
Traditional oil processing
For the case of the northern area, local traders buy bulk of raw groundnut at Dawanau interstate market and bring them to individual traditional oil processors' homes. Oil processors buy raw materials from local traders. The cost of raw groundnut is NGN 300 per Tiya[11] and oil processors pay for traders' transportation cost, which is about NGN 70 per bag in Tumfafi's case. Many local traders live in the villages where oil processing work is operated. Thus, local traders and oil processors tend to be neighbours, friends, immediate family, or relatives.

Individual households, food vendors, restaurants, and bakeries located within the Kano metropolitan area are the largest consumers of traditionally processed groundnut oil. The oil is supplied on credit by the processors to these traders. Traders take oil to Dawanau, Rimi, Yankaba, Janguza, and other markets within and around Kano City. Oil traders also visit local restaurants, bakeries, food vendors, and consuming households to sell groundnut oil in Kano City.

The women and young oil traders in Tumfafi village sell mainly in the Dawanau market to larger traders and consumers. The market is located about three kilometres away from Tumfafi village. After bulking large quantities using twenty litre jerry cans, male traders will then distribute the oil to retailers, individual consumers, and food vendors across Kano City.

Mechanical oil processing
Availability of raw groundnuts and price is always reasonable during the peak period of harvest and supply, which usually lasts for only about three months (starting from August or September) within the year, and after that period, availability becomes increasingly lower and prices continue to increase in the same pattern. The enterprises use the umbrella of their association in coordinating raw material procurement and also in ensuring fair price and quality from suppliers.

Consumers
At Rimi and Janguza markets, consumers are both male and female. Age varies from the twenties to the sixties. They buy groundnut oil to make soup or to fry something, and unit of purchase ranges from a quarter to one litre. They are mostly satisfied with the current container in the market, but their preferred container is a plastic bottle. Factors of choosing groundnut oil are better price, taste, smell, and reliable quality. They are also consumers for palm oil and soybean oil. There is no specific criterion on quality preference, but they prefer better quality of oil. They did not show dissatisfaction for a recycled glass bottle, but preferred a better sanitized container such as a plastic bottle.

3) Prices and trading volumes
Raw groundnut
In terms of price of the raw materials at the upstream part of the value chain, traders generally indicated wide fluctuations in prices within a year with an increasing trend as the dominant behaviour over the past five years. As Table 4-15 indicates, the price of raw groundnuts has increased in these past five years.

[11] One tiya is equivalent to 2.5 kilograms.

Table 4-15 Price change of raw groundnut in these past five years

	Time frame	Price Range
1	Five years ago	NGN 5,600 to NGN 6,800 per bag
2	Current	NGN 10,000 to NGN 17,000 per bag

Source: Project Team

Last year's price of raw groundnuts during the peak season was NGN 10,000 to NGN 12,000 per bag, and in the off peak season, it cost from NGN 12,500 to NGN 17,000 per bag. Price of raw groundnuts is considered to be currently very high and it has increased drastically over the last five years. Availability of groundnuts is seasonal, but in major production areas such as Niger, Nassarawa, and Taraba State, groundnuts are available from major bulking traders throughout the year and the prices from these states are relatively lower than other states.

Generally, individual capacity for procurement has increased over the past years among the traders due to increasing demand for the raw groundnuts from local processors and improvement of storage capacity at the trader's level. However, the improvement of traders' procurement capacity did not lead to increase in farmers' production.

2) Groundnut oil

As shown in Table 4-16 the price of bottled groundnut oil made by the mechanical process ranges from NGN 180 to 350 per bottle depending on the season and the trading volume of enterprises. In general, the oil processed with the traditional method is relatively cheaper than that processed with the mechanical method.

Table 4-16 Price of groundnut oil with the traditional method

	Time frame	Price Range
1	August to December	NGN 150 to NGN 220 per bag
2	January to July	NGN 220 to NGN 250 per bag

Source: Project Team

For traditional oil processors, in these past five years, extraction volume has been increasing from 12.5 kg to 25 kg (from 5 to 10 Tiyas[12]) per day. On the other hand, mechanical oil processing enterprises process up to about 10 tons per day (about 20 drums of oil and 5 tons of cake).

For the mechanical oil processors, poor availability of groundnut seeds during the off-peak period is a major problem which the processors faced in procuring raw materials; during such times, supply is obtained only from distant markets outside the state of Kano and this adds to the costs of procurement. The milling machines used in production of oil are generally Indian or Chinese made, and operators are now changing to use of the Chinese made milling machine because of improved efficiency, ease of maintenance and repairs, and less consumption of electricity.

4) Financial and economic status of groundnut oil value chain

Annual expenses

The highest expense for oil processing cluster is salary, which accounts for 40 to 60% of the total expense for enterprises of the Sharada area. The second highest expense is transportation cost, which

[12] 1 Tiya is equal to 2.5 kg for the groundnut oil business.

takes from 20 to 30%. Other major expenses are machine repairs and maintenance, rent, utilities, and taxes and licence fees.

For traditional oil processing cluster, the highest expense is employees' salary, whose fraction of the total amount is higher than for mechanical oil processors, 50 to 97%. The second is the same as for mechanical processors, but the ratio to the total amount is lower, from two to 20%. Other major expenses were maintenance cost and fuel wood. Profit levels of traditional oil processors are higher than mechanical oil processors, but total amounts of revenues are higher for mechanical processors due to higher trading volume.

Access to formal loans

Groundnut trading is capital intensive in terms of transportation, handling, and storage, as many traders indicated that if adequate access to finance is available they wish to increase their capacity in terms of procurement because there is a lot of demand along the value chain in Kano. Most oil trading enterprises and oil processing enterprises do not have access to formal loans through a commercial bank. They think that they also do not have appropriate knowledge on filling an application form and making a business plan to persuade banks. Enterprise owners want to receive training for that, but they do not have knowledge on what kind of BDS is available. Lack of collateral is another major issue for banks to provide a loan to MSMEs of the groundnut oil industry. Groundnut MSMEs want to obtain loans to expand their business opportunities, but the reality is that few enterprises have been successful in borrowing money from them.

5) Management and business styles

Traditional oil processors

In the case of Tumfafi, an enterprise owner has 5 to 6 temporary workers for oil extraction. These temporary workers bring groundnut dough to their home and conduct manual extraction because working space within one house is limited.

Mechanical oil processors

At Dakata small scale industrial site, only four enterprises were operating their businesses in July, 2010. Most of them were not even extracting groundnut oil; they were processing soybeans. Profits cannot be made if they process groundnuts[13] during the off peak season. These enterprises can use the same machine to process soybean oil as for groundnut oil, but the oil content of soybean is lower than that of groundnut. Thus, the profit margin from soybean oil processing is lower than that from groundnut oil. This is a way of keeping their businesses in Dakata mechanical oil processing centre during the off-peak season. Even during electricity cut-off, they do not run their generator because operation cost is higher if they run a generator. Sharada mechanical oil processing centre has a better situation than Dakata, but in general, these two clusters' capital levels are becoming too low to improve this situation.

6) Employed technologies and techniques

The traditional oil extraction processing steps can be summarized as follows.

- Cleaning and sorting out of the shelled groundnut seeds to remove impurities and mouldy seeds
- Roasting (frying the nuts with continuous stirring under light fire/heating)
- Drying 30 to 40 minutes fried nuts for cooling down
- Soft-crushing to detach the skin from the meso-carp (Ba-Hausa variety has harder skin compared to Yar-Dakar or Maibargo thus requires more time)
- Separating meso-carp from the skin through winnowing and grinding by using milling machine
- Heating the milled paste in a pot with constant stirring
- Adding small quantities of water to evolve the oil

[13] The price of raw groundnut is the highest in July every year.

- Extracting oil by squeezing with hands (Paste is placed on a grinding plate)

The remaining paste residue is left to be processed into cake. For the cake process, steps are as follows.

- Pounding groundnut paste manually in a mortar
- Adding small quantities of water, spices, seasoning, salt, and onion with constant stirring
- Placing cakes on a clean flat surface to cut it
- Frying the cut cake by using the extracted oil

The oil residue gains a peculiar taste, colour and aroma which provide oil a premium value compared with raw groundnut oil from industrial sources. For raw groundnuts, 50kg leather sacks are used for packaging. For deliveries, a lorry and other commodity vehicles owned by transporters are used. Glass bottles are used for selling oil. Mostly used bottles are washed and used to sell the oil. Variable containers are used for selling the cake ranging from metallic, aluminium, and stainless steel to plastic containers.

At the mechanical oil milling factories, Chinese or Indian made oil extracting machines are used. Chinese machines are considered to be more efficient, easier for maintenance use less electricity. One factory owns 1 to 2 machines. Double milling is necessary to extract contained oil. Regular capacity of the milling machine is extracting about one ton of oil per day[14]. The machine also creates cakes while extracting oil. The cakes are sold for animal feed and they are important income sources for mechanical oil processors. Oil residue is also sold to an enterprise which uses it for other purposes. Other kinds of oil can be extracted with the current type of machine such as cotton seed and soy beans. Extracted groundnut oil is poured to a drum can and waited for a few days pure oil comes to the upper part in the drum. Oil is sold with 220 litter drum or removed to 20 litter plastic containers for sale.

(5) Issues identified

1) Government services

As described in section 4.3.5, the Kano State Ministry of Commerce, Industry, Cooperatives, and Tourism (KMCICT) provides interest-free loans to small and medium scale enterprises. NGN 150,000 to NGN 2 million funds used to be available. Many groundnut oil millers have borrowed loans in the past. However, the fund is not available currently.

In the past, SMEDAN has provided training on record keeping and business plan development to Sharada mechanical oil traders. Processors who received training appreciated it, but record keeping is not currently practiced among mechanical oil processors.

2) Management related issues

The major issues and challenges they have are mainly in the areas of processing methods and technology, which they see as laborious, and also access to finance for expansion of operation. For the case of traditional oil extraction, extractors spend eight hours a day to do their work, which requires a lot of strength. Some women complain about abdominal pain due to long hours of drudgery work. Less manual labour in bending forward or crouching reduces a burden of oil extractor's work. They also get burned when they squeeze groundnut dough, because of its high temperature. Currently, traditional oil extractors do not have an alternative method of processing, due to limited knowledge and limited amount of capital for investment.

Another issue is caused by payment with credit, which is a business custom of the groundnut business in the Kano area. The payment method is chosen by enterprise owners. Mechanical processors who are major buyers and other traders sometimes buy on credit, and this causes a trouble that money is not

[14] 4 drums (220 litters per drum) of oil can be extracted with 18 hours of work in one day.

paid as promised, especially among traders at Dawanau interstate market. If this situation can be ameliorated by improvement of management skills, support such as provision of training would be necessary.

3) Technical issues

Major challenges of traditional groundnut oil milling based on the present technology are inefficient and laborious that is often exhausting and time consuming especially roasting and pounding processes. Eight hours of oil extraction work daily cause oil millers' health problem such as back pains and exhaustions. Presence of impurities and mouldy seeds makes the task more difficult. During oil extraction process, labourers' sweat fall in the oil which is not considered hygienic. Processes require manual labour needs to be reviewed.

Using a recycle bottle as a container for oil may also cause a hygiene issue for consumers. The majority of consumers at Rimi market and Janguza market do not complain about the current containers, but they prefer to plastic containers.

There is a supplier of parts for oil milling machine in Kano city if a machine has a problem. There is a technician who can repair the machine at the enterprise as well. However, constant power failure and high cost of raw groundnut limits milling volumes and milling machines are not fully utilized at all. The machine has more capacity to be operated and these two issues seriously need to be considered for ameliorating this situation.

4) Market structure

There is a strong demand for groundnut oil in Kano State. Also, sometimes, good varieties for oil extraction are not available at the market. This is partially because Kano is heavily dependent on groundnut productions of other states. Lack of production in Kano State causes limitation of choices in varieties and higher price of raw groundnut during off peak season. Increase in production of raw materials in Kano may reduce the price of raw groundnuts and widen choices of varieties, which help improve profitability of other stakeholders of the groundnut value chain.

Timely availability of raw groundnuts is related to farmers' production capacity and an increasing number of oil extraction enterprises in other states. Traders in Kano State indicated that agricultural subsidies help improve timely availability of raw groundnut. It is assumed that the groundnut oil market is influenced by the government's subsidies.

The quality of groundnut seed has improved over the years because suppliers are becoming more conscious of quality issues as a result of claims they received from industrial processors. However, there has not been systematic effort by the major stakeholders for improving quality of raw groundnuts. Hence, quality is expected to remain the same for the future.

Another issue is that mechanical oil processors purchase raw materials from traders of Tafawa Balewa road and traditional oil processors purchase raw materials from traders of Dawanau interstate market. Purchasing lines have been established depending on types of business operating. There is not sufficient competition in markets for raw groundnuts.

Vegetable oil from foreign countries is imported into Nigeria illegally[15]. Foreign vegetable oil has been sold cheaply at markets and weakens demand for groundnut oil. These oil is reported to be delivered from the Republic of Niger, China, Malaysia, and, Turkey. The one from Turkey is well packaged in three litre portable stainless steel containers, and price ranges from NGN 900 to 1,000 per container. Vegetable oil from Malaysia and China is considered to be lower grade. Traders repack

[15] Currently, the Nigerian government bans imports of all kinds of vegetable oil.

lower grade imported oil in four litre containers and sell them at NGN 1,500 per container to retailers or consumers. The illegally imported low-price vegetable oil may weaken demand for groundnut oil.

5) Associations and cooperatives

The enterprises are organised as a social entity which was registered as Dawanau Groundnut Sellers Association with the Kano Government. The main functions of this association are in areas of social services, such as maintaining security in the marketplace through engaging private security personnel to guard market areas and warehouses, and the association also maintains and repairs basic market infrastructures such as drainage ditches and culverts. Each enterprise pays weekly dues. There is generally no collective action or strategy as an association in terms of procurement and selling of merchandise.

6) Infrastructure

Weak infrastructure gives serious negative impacts on groundnut oil processing clusters, especially shortage of electricity. For processing oil with machines, a lot of electricity is required and unstable electricity lowers production rate. Since the larger portion of the raw groundnuts comes from other states, improvement of road conditions would enhance cost and time efficiency in transportation, which may lead to a reduction in the price of raw materials.

7) Multiple taxation

The traders pay multiple taxes to the state and local government tax collectors on a monthly basis. This issue of paying tax to two different government arms at a time is considered to be a disincentive to the traders and lowers their profit margins. This issue can be applied to other industries and it not only discourages registration of their enterprises with the government but also discourages entrepreneurs from starting new businesses.

4.2 Niger State

4.2.1 BDSPs in Niger State

(1) Niger State SMEs and Microfinance Agency

Niger State SMEs and Microfinance Agency has an entrepreneurship training programme supported by SMEDAN, Niger State Government, UNDP, and GTZ. The programme provides training courses on formulation of business plan, bookkeeping, administrative management, and monitoring and evaluation. Entrepreneurs can get basic knowledge to get started in their new business. In addition to the entrepreneurship training, the agency introduces microfinance banks to the trainees who complete the training courses because they need seed capital to realise their business plan. The agency also has a role of one of the windows for application of Nigeria Economic Reconstruction Fund (NERF) operated by SMEDAN.

(2) Technical Incubation Centre

Technical Incubation Centre (TIC) in Niger State fall under the Federal Ministry of Science and Technology. The centre has 22 incubator units and provides various business development services such as technical skills training, business management training, introduction of public loan scheme (Bank of Industry and NERF), seed capital loans (interest-free) and grants, and power and water supply for the incubated entrepreneurs. Selected entrepreneurs can use the incubator lots for 3 years, and use e-library and laboratory without charge. In addition, the centre provides for the entrepreneurs 50 percent subsidies to company registration fee, product certification fee, and electricity charge. Extension services by the centre are also available to the villagers living in rural area.

(3) Business Support Centre

Business support centres (BSCs) are established by SMEDAN and state governments. The BSC in Niger State will be run by Niger State SMEs and Microfinance Agency. Establishment of the centre is in preparation and will be open in September 2010. Three agency staff members will be engaged in operation, and provide market information analysis, capacity building, and consultancy services. UNDP, UNIDO, GTZ, and USAID-MARKET are major partners of the Centre. Main target users of the centre are cooperative societies and their members. Business-related information will be provided free of charge, while the consultancy services will be provided with charge.

(4) Microfinance Banks

Niger State government has a plan to establish at least one microfinance bank (MFB) in one LGA, and Niger State SMEs and Microfinance Agency facilitates establishment and sustainable operation of the banks. Currently, there are 17 MFBs in 15 LGAs. Another 12 MFBs will be established by the end of the year 2010. Conditions of loans depend on policy of each MFB. For example, one bank has the following conditions on microfinance.

- Interest rate: 10 to 15 percent
- Maximum loan amount: 200,000 Naira for individual customer, and 500,000 Naira for Cooperative Society with more than 10 members
- Cooperative Society should be registered.
- No extra charge for arrears
- No collateral (for cooperative society, the members guarantee each other. The bank monitors their performance one by one.)

(5) Other providers

There are other private service providers in Niger State, such as Niger Chamber of Commerce, Industry, Mines, and Agriculture (NACCIMA) and Nigerian Association of Small Scale Industrialist (NASSI). Those two organisations are supported by GTZ on capacity development.

4.2.2 Shea product

(1) Current situation of BDSPs

Both government and private institutions provide business development services to stakeholders in the shea value chain.

1) Niger State Commodity and Export Promotion Agency
Nigeria State Commodity and Export promotion Agency (NSCEPA) has been a leading agency to promote the shea value chain in Niger State. Activities of NSCEPA on shea include the following (Yusuf, 2010).

- Coordination of shea stakeholders activities
- Support to research
- Promotion of shea upgrading
- Facilitation of finance to village programmes and linking production to markets
- Promotion of shea butter villages
- Identification of buyers for produce
- Establishment of a minimum guaranteed price for shea products
- Agency might act as warehouse for shea products in the future

2) Employment oriented Private Sector Development Programme

The Employment oriented Private Sector Development Programme (EoPSD) is a programme supported by Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ). EoPSD has supported the sea sector in the following areas (Yusuf, 2010).

- Baseline studies and research on shea sector
- Bringing together and linking shea stakeholders and mapping the potentials and challenges in the sector
- Group formation and strengthening
- Upgrading the traditional method of processing nuts and butter
- Awareness program against tree felling
- Support for individuals to participate in local/international shea workshop
- Market linkages between groups and buyers

3) Niger State Shea Products Association

Niger State Shea Products Association (NISPA) has more than 100 members: 30 to 40% are processors and 60 to 70% are traders. NISPA provides information and market linkages to shea stakeholders. It is trying to build a network with all the shea processing cooperatives in Niger State. Their plan is to have a shea association in each Local Government Area (LGA) to coordinate shea processing cooperatives within LGA, and coordinate LGA shea associations under NISPA. They are also trying to link shea butter cooperatives to manufacturing companies and exporters.

4) Fadama II project, Ministry of Agriculture

Fadama II project financed by the World Bank and implemented under the Ministry of Agriculture supports eight LGAs in areas including capacity building, rural infrastructure development, productive asset acquisition, and advisory services. In terms of shea production, Fadama II has provided rural communities with soft loans through their fadama users groups as well as advisory services on quality control of shea butter (Dauda, 2008).

5) Ministry of Local Governments and Local Governments

Local Government is the closest tier of government to the rural communities. In 2009, NSCEPA and the Ministry of Local Government supported training of 25 Principal Women Development Officers (PWDOs) who belong to 25 Local Governments, on shea nut and butter processing. PWDOs are expected to train shea nut and butter processors in rural communities.

6) National Cereals Research Institute

National Cereals Research Institute (NCRI) has a branch office located in Bida. NCRI provides service to test quality of shea butter. The institute usually charges NGN 2,000 per sample, but for traditional shea butter processors, it offers a discount rate of NGN 700 per sample. Some mechanical shea butter processors also bring their samples for quality test.

7) Nigerian Institute for Oil Palm Research

Nigerian Institute for Oil Palm Research (NIFOR) has its headquarters in Benin, Edo State, with an out-station in Bida. Shea is one of the mandate crops of NIFOR. NIFOR has been providing information and business advisory services as well as skills training for shea enterprises in Bida and surrounding areas. They are also involved in production and processing of shea butter.

8) Machinery distributors and exporters

Some distributors of shea nut and butter processing machines and export companies provide business services to processors and traders. For example, Coyam, a machinery distributor, provides business services on operation and maintenance of machines to mechanical shea butter processors. Similarly, OLAM (Nigeria) Limited, an exporting company, provides business services to teach shea nut traders

how to identify high quality shea nuts in terms of moisture content, impurities, and free fatty acids (FFA).

(2) Type of clusters and their characteristics

The shea value chain comprises three major clusters: shea nut processors, shea butter processors, and shea nut and butter traders. Shea butter processors are divided into traditional processors and mechanical processors.

1) Shea nut processors

Shea nut processors are micro enterprises scattered in rural communities. Enterprises normally use family and communal labour, mostly women, to harvest and process nuts. Most of the processing is done manually, and production capacity is small.

Shea nut processors provide the raw material for the entire shea value chain. The individuals involved in harvesting of shea fruits and processing of shea nuts are mainly young and elderly women. Since harvesting fruits involves trekking long distances, they usually move in groups for security reasons. Suleiman (2008) found out that very few shea fruit collectors are organized as registered groups, and most of them operate as informal groups.

Shea fruits harvested from wild are then processed. Shea nut processors in three geographical zones of the state have different ways of processing shea nuts. Table 4-17 shows different methods of shea nut processing in three zones in Niger State.

Table 4-17 Method of shea nut processing

Zone A (Katcha, Bida, Lavun, etc.)	Zone B (Bosso, Shiroro, etc.)	Zone C (Borgu, Rijau, Kontagora, etc.)
• heaping	• depulping of nuts	• parboiling of nuts
• depulping of nuts	• sun-drying of nuts	• drying of nuts (2 days)
• smoking of nuts	• cracking with stone	• cracking to remove shell
• cracking to remove shell	• smoking / frying	• second drying
• storage	• storage in sacks	• bagging

Source: EoPSD, 2009

The quality of processed shea nuts is dependent on the steps involved in their processing. Some processors also do not follow all the steps. The minimum process includes drying of seeds and removal of shell, followed by further drying. For example, shea fruits harvested in Bida have better quality than those in Kontagora and Borgu. However, shea nuts processed in Bida are less desirable for exporting companies compared to nuts processed in Kontagora and Borgu. This is because the nuts from Kontagora and Borgu are further fried after parboiling, while those from Bida are roasted instead of dried or fried. Consequently, nuts from Kontagora and Borgu contain more oil, and weigh more. About 390 bags of Bida nuts make 30 tons of butter, whereas only about 310 - 320 bags of Kontagora nuts make 30 tons.

The quality of processed shea nuts is also dependent on the quality of shea fruits harvested. Shea butter processors have affirmed that the nuts that have germinated yield low quality of butter. However, harvesters of shea fruits are more concerned about the volume of their harvest and are not careful in selecting fruits of good quality. Another source told that germinated nuts are sold separately from non-germinated nuts for lower prices.

Processed nuts are sold to either shea nut traders or shea butter processors. The only by-product of shea nut processing is the shell, which has no market value and is often disposed off as waste by the processors.

2) Shea butter processors

Traditional shea butter processors have characteristics similar to those of shea nut processors. They are mostly micro enterprises in rural communities, and family and communal labour, mostly women, are used. Most processing is carried out manually, and production capacity is small. The clusters of traditional shea butter processors often exist within the same communities where the clusters of shea nut processors are found. The traditional shea butter processors usually obtain their raw materials from local traders of shea nuts in addition to a small amount of nuts they are able to gather on their own.

There is some cooperation among members of traditional shea butter clusters. They help each other in butter production, especially kneading of the milled nuts. Kneading is known as the most laborious activity in the process of shea butter processing. The traditional method of shea butter processing requires considerable time and labour. It is said that a single processor is likely to produce only about 25 litters of shea butter per week. In the same way as shea nut processing, the method of traditional shea butter processing differs from one zone to another. Table 4-18 shows butter processing methods of Zones A, B, and C.

Table 4-18 Methods of shea butter processing

Zone A (Katcha, Bida, Lavun, etc.)	Zone B (Bosso, Shiroro, etc.)	Zone C (Borgu, Rijau, Kontagora, etc.)
• pounding of nuts into smaller particles • sun drying • milling of nuts • kneading • collection of butter • boiling of butter	• grinding of nuts • kneading • extracting butter • rinsing of butter • frying of butter • packaging	• pounding of nuts • frying of pounded nuts • milling of fried nuts • kneading of fried nuts • skimming of butter • frying • solidifying

Source: EoPSD, 2009

Most traditional shea butter processors are ignorant of butter quality specifications. Traditional shea butter processors believe that it is the taste of butter that determines quality. Shea butter extracted from germinating shea nuts tastes bitter, which butter processors consider low quality. As mentioned earlier, the quality of shea butter is highly dependent on the quality of shea nuts. However, there are chemical specifications that define the quality of shea butter.

Some shea butter processing communities have taken samples of their butter to quality testing. Table 4-19 shows the result of laboratory analysis of shea butter that EoPSD requested the National Cereal Research Institute (NCRI) to test.

Table 4-19 Result of laboratory analysis of shea butter

Community (LGA)	Free fatty acid (FFA)	Moisture	Peroxide value	Saponification Value	Iodine value	Impurities	Refractive index
Gbongbon (Edati)	1.96	0.65	5.34	185.32	60	0.18	1.465
Wawa (Borgu)	2.04	1.95	8.09	183.42	59	0.14	1.466
Assanyin (Katcha)	1.86	0.33	8.14	185.60	60	0.21	1.465
Tswasha (Lavun)	1.09	0.37	5.28	184.32	54	0.17	1.464
Farinshinge (Kontagora)	1.66	1.63	8.33	182.40	62	1.04	1.465
Etsu-Adu (Gbako)	0.94	0.42	8.10	184.86	58	0.12	1.466
Bassa (Shiroro)	2.24	1.46	7.22	183.88	58	0.12	1.466
Babangwari (Lapai)	3.04	0.92	8.81	187.31	62	1.15	1.466
Chiji (Mokwa)	1.84	0.42	5.77	184.92	61	0.84	1.464
Katako (Rafi)	1.04	0.74	8.23	185.52	55	0.38	1.466

Source: National Cereal Research Institute

Traditional shea butter processors are patronized by local consumers that use shea butter as cooking oil and apply it to the hair and body. Their butter is also bought in large quantities by traders known as local bulking agents.

In contrast to the traditional shea butter processors, mechanical processors operate on a larger scale using machines to process butter, and are usually run by men. There are several mechanical processors in Niger State located mainly in commercial towns such as Minna and Bida.

They obtain their raw material, or processed shea nuts, from traders, or major bulking agents. The mechanical shea butter processors are patronized by both exporting companies and cosmetics manufacturing companies within the country. By-products of the mechanical extraction process are cake and slush. Cake is sold to local manufacturers to be used in production of traditional "black soap," and some mechanical shea butter processors produce black soap on their own. On the other hand, slush is used as fuel within local communities.

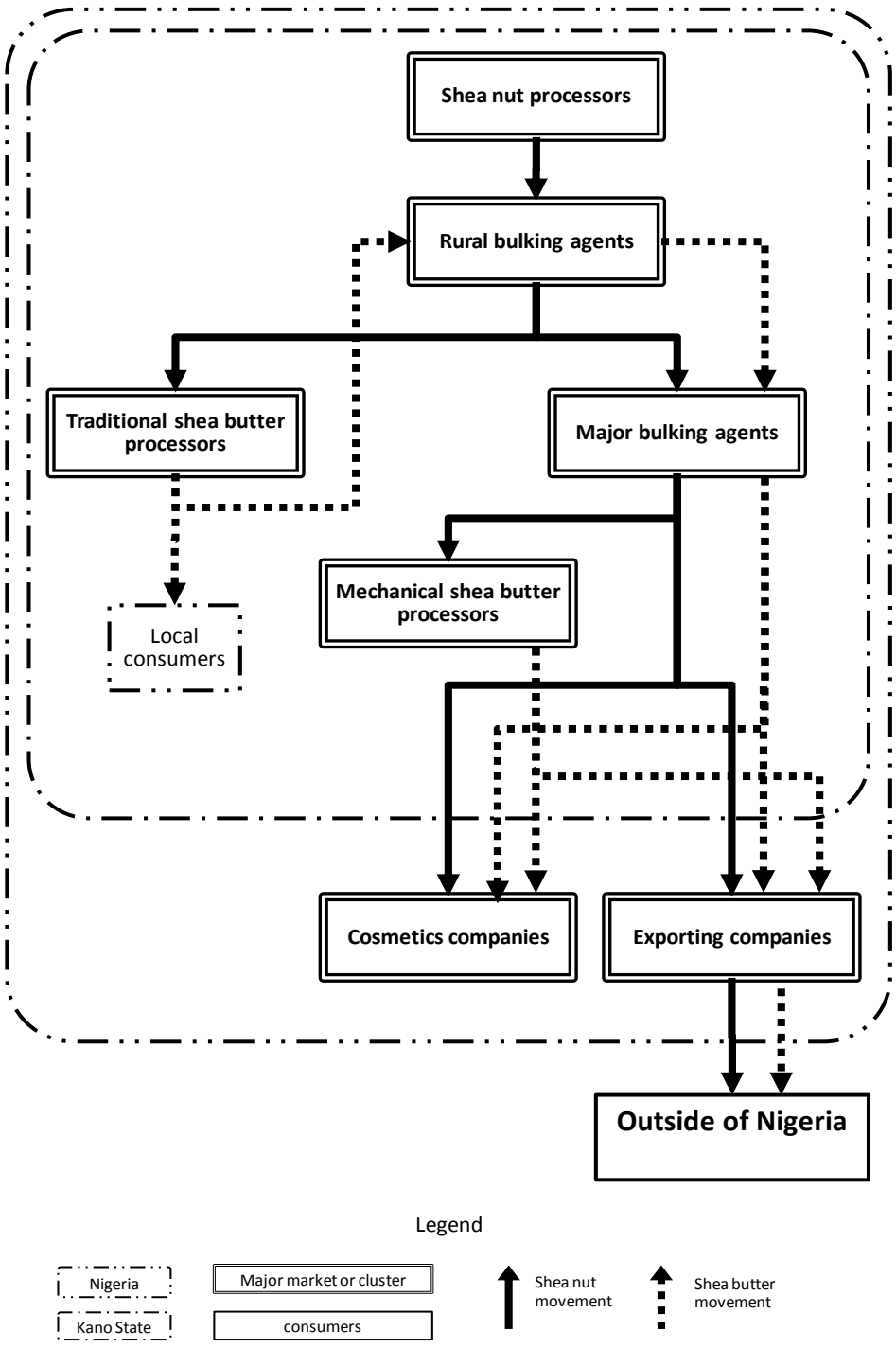
3) Shea nut and butter traders

Shea nut and butter traders can be divided into two categories.

- Rural bulking agents
- Major bulking agents

Rural bulking agents are local traders to collect nuts and butter directly from shea nuts processors and traditional shea butter processors. They supply nuts to traditional butter processors. They also buy processed butter in large quantities from traditional butter processors. They are normally located in the same locality as nuts processors and traditional butter processors.

Meanwhile, major bulking agents are larger enterprises that gather nuts and butter from rural bulking agents. These are generally operated by men with large capital outlay (usually above N 5 million). Although each agent operates independently, they are moving towards formation of an association to protect themselves against demand and price uncertainty. These enterprises are the major suppliers of shea nuts to mechanical shea butter processors, shea butter exporters, and cosmetic manufacturers. The mechanical shea butter processors buy nuts from the major bulking agents for as high as N 40,000 per ton when demand is high. The price may fall to N 16,000 when demand is low.



Source: Project Team

Figure 4-6 Structure of shea value chain in Niger State

Interview with export companies describes that 1 to 20 bags of shea nuts are supplied to the companies by each local bulking agent (13 shea nut bags make 1 ton of butter), while 150 - 200 tonnes are

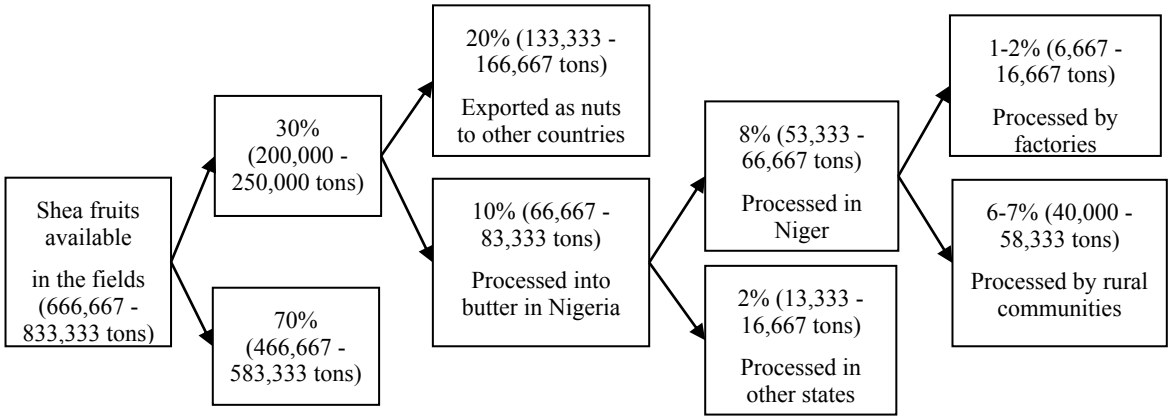
supplied by each major bulking agent per season, depending on demand. The company also receives less than 60 tons of shea butter from traditional shea butter processors due to their technical constraints. Therefore, the exporting companies prefer buying shea nuts from bulking agents and extract butter mechanically. By mechanical extraction, 30 tons of shea nuts usually yield 12 - 13 tons of butter. Figure 4-6 shows the value chain of three clusters: shea nut processors, shea butter processors, and shea nut and butter traders.

(3) State-wide distribution of clusters and stakeholders

1) Production and trade of shea nuts and butter in Niger State

Nigeria is a major producer of shea nuts and butter among countries in West Africa. Within Nigeria, Niger State is considered the largest producer among the states producing shea nuts and butter in the country.

Niger State Shea Products Association (NISPA) provides the overview of production and trading of shea nuts and butter as shown in Figure 4-7. Out of the total shea fruits grown on wild trees in the state, only 30% are harvested while another 70% are wasted. Out of 30% harvested as nuts, 20% are exported as nuts to other countries, and the remaining 10% are processed within the country. Out of the 10% of nuts processed within the country, 8% are processed in Niger State. Among these 8%, 6-7% are processed into butter by traditional processors, while 1-2% are processed by mechanical processors.



Source: Interview with NISPA and Suleiman, 2008

Figure 4-7 Estimate of shea nuts and butter processed and traded

About 70% of shea nuts are thought to be wasted in the field. One factor may be accessibility. Some trees are too far from communities, in preserved forest, or on some people's private land. Another reason often mentioned is that the price of shea nuts is too low to meet high labour cost, and people are discouraged from increasing their harvest. NISPA considers this availability of unharvested fruits to be a huge opportunity for shea production in Niger State to expand in the future.

After harvesting, shea fruits are processed into nuts, and one third of those processed nuts are estimated to be taken out of the country. More shea nuts are traded than shea butter, and this has been a long term trend in Niger State. This major outflow of nuts may be due to limited capacity of shea butter processors both traditional and mechanical in terms of quality as well as quantity. In other words, there is large room to increase shea butter production in Niger State.

It is not known how much nuts and butter are actually produced in Niger State. Statistical data on production of shea nuts and butter are very limited. This is mainly because of the nature of shea nuts and butter as commodities. Shea fruits are not cultivated but grown wild, and harvesting of shea fruits is not covered in agricultural statistics. Also, no survey is conducted to estimate the number of shea trees and volume of shea fruits grown in Niger State.

The only statistical data available are the amount of shea nuts traded at local markets. Some portion of shea nuts is traded at local markets, but the majority may be collected by traders directly from rural communities. Table 4-20 shows the amount of shea nuts purchased in local markets from 1999 to 2003. Considering that most processed shea nuts are collected by rural bulking agents directly from rural communities, these figures may reflect only a small portion of the shea nuts processed in the state.

Table 4-20 Purchase of shea nuts in Niger State by year

Year	1999	2000	2001	2002	2003
Shea nut (metric tons)	17,128	34,420	-	29,980	30,300

Source: Niger State, n.d

As for the entire production of shea nuts in Niger State, the only figure available is the estimate by Dr. Suleiman, who conducted an assessment of potentials for shea nuts in the state. According to his estimate, the total volume of nuts harvested in Niger State could be between 200,000 ton and 250,000 ton per year (Suleiman, 2008). Figure 4-7 shows the estimated amount of shea nuts exported and processed as well as the amount of shea butter processed by traditional and mechanical processors. According to this estimate, the amount of shea butter processed by traditional processors in Niger State is between 40,000 and 58,333 tons, and that by mechanical processors is between 6,667 and 16,667 tons.

2) Geographical distribution of shea nuts and butter production in Niger State

Out of 25 Local Government Areas (LGAs) within Niger State, 22 LGAs have shea nut processors and traditional shea butter processors. Some of them are organized into cooperatives in each community. It should be noted that not all traditional shea butter processors are engaged in commercial production. Some people produce for their own consumption or to sell to their neighbours. Rd. Suleiman (2008) estimates that over 50% of shea butter produced by traditional shea butter processors is consumed within their communities.

Although shea nuts and butter are produced all over the state, there is geographical concentration of shea trees as well as concentration of nuts and butter production. Geographically, shea trees are concentrated in the following LGAs: Agaie, Bida, Katcha, Mokwa, Lavin, Edati, Borgu, and Agwara. All shea trees are gown wild, and no shea plantation has been developed. A shea tree needs between 8 and 15 years until the first harvest and longer to reach full capacity. It is said that cultivation of shea tree has been very difficult because of the nature of its roots (Suleiman, 2008).

Major bulking agents supply shea nuts and butter to manufacturing companies and exporting companies. In Nigeria, major manufacturing companies buying shea nuts and butter from Niger State are located in Lagos, Kano, and Port Harcourt. On the other hand, major exporting companies buying shea nuts and butter from bulking agents and shea butter processors are located in Kano and Lagos. They also supplement supply with nuts from Kebbi and Kaduna States. The exporting companies send shea nuts and butter to countries such as Vietnam, Singapore, and India.

Due to free terms of trade in Benin, the majority of the exporting companies prefer sending their commodities through the ports in Benin instead of Lagos. Shipping one container of 15 tons of commodities from the ports in Benin is said to be cheaper than Lagos by US$3,000. According to

NISPA, at one border gate, 50 trailers of shea nuts (one trailer can carry 30 tons) can be observed every day for three months between September to December.

3) Price of shea nuts and butter in Niger State

The price of shea nuts and that of shea butter vary from community to community and from one season to another. Major reasons to explain these price differences may be quality and availability of shea nuts and butter. Both shea nuts and butter in all LGAs listed have higher price during the dry season when supply is scarce compared to the wet season when newly harvested nubs are abundant.

(4) Characteristics of shea value chain in Kacha LGA

Kacha LGA is the area where major production and trading of nuts and butter take place in Niger State. There are three clusters existing in the area: shea nut processors, shea butter processors, and shea nut and butter traders. The shea butter processing cluster contains traditional shea butter processors and mechanical shea butter processors. In the same way, the shea nut and butter trading cluster includes rural bulking agents, who collect nuts and butter from rural communities, and major bulking agents, who assemble supply of nuts and butter from rural bulking agents.

1) Shea nut processors

Enterprises and their management

Value chain analysis and baseline survey were conducted with members of one shea nut processing cooperative in Katcha LGA. Sixty members, mostly women, are organized and registered as a cooperative. Their cooperative is a loosely structured organization, and its members process shea nuts as individual enterprises. There is, however, some cooperation among members. For example, members go to harvest shea fruits together in a group for security reasons. They look after each other's production when someone has to be away from home. Some processors also assist each other in marketing their shea nuts. Some processors said that after selling all their nuts at the local market, they would assist other processors to find buyers for the remaining nuts.

Production, distribution, and consumption channels

Shea nut processors are micro enterprises mostly run by women in rural communities. They mainly use family labour to harvest shea fruits from wild shea trees and process them at home. Some go to harvest themselves, some send their children to harvest, and others buy fruits from those who harvest. One processor told that she could harvest 200 kg of shea fruits within two days. According to her, others may take three to four days to harvest the same amount. When they do not have enough nuts to process, they also buy unprocessed nuts from local traders.

The shea trees grow naturally, but if they grow on somebody's property, fruits are harvested with the permission of the land owner. Shea fruits have to be harvested soon after they fall down from branches. Fruits on branches are not ripe enough to extract quality butter. On the other hand, if fruits are kept on the moist ground, they may germinate easily, and this affects butter quality as well.

Harvest of shea fruits in Bida area starts in June and extends to August or September each year. After harvest, they remove the pulp to take out the seed, and remove the shell from the seed using a mortar and pistil. This is followed by winnowing to remove foreign materials. The nuts are then roasted or parboiled. Generally, roasting is a traditional method, while parboiling is a method recently promoted by EoPSD, Fedama II, and NSCEPA with the aim of improving quality of shea products. Some processors stated that the parboiling method produced better quality nuts.

Shea nuts processing is seasonally concentrated between June and September when shea fruits are harvested. Some processors produce nuts only during these months, while others produce almost every month around the year. Even for those who produce all year around, the volume of production is still higher during harvest season.

Major items of production cost include labour, transportation, and firewood. Although shea fruits can be harvested free of charge, transportation cost must be spent to bring harvested fruits home. It costs NGN 100 for 100 kg of nuts. Some sell nuts to traders who collect nuts from their community, and others bring their nuts to local markets. Another transportation fee must be spent to take their nuts to the market. If they cannot sell all the nuts they have brought to the market, some processors said that they had to pay for storage to keep their nuts at shops in the market. Some processors also complained about the increasing price of firewood. One said that a bundle of firewood cost her NGN 300.

Most of the processing is handled manually. None of the three shea nut processors interviewed in value chain analysis owned any machine, but they are all interested in using some machines in their production in order to improve efficiency and increase output. One said that she was even planning to buy some processing tools if possible.

Some of the processed nuts are sold to traditional shea butter processors, and the rest is sold to local traders, popularly called rural bulking agents. It is estimated that about 30% are sold to traditional shea butter processors, and 70% to rural bulking agents.

Prices and trading volumes

The price of shea nuts is said to fluctuate seasonally, from around NGN 2,400 per 100 kg during the on season to around NGN 4,000 per 100 kg during the off season. The result of baseline survey supports seasonal price fluctuation, but price differences in most cases are from a few hundred naira to several hundred naira. For example, one processor sells processed nuts for NGN 3,000 per 100 kg from June to October, and the same processor sells nuts for NGN 3,150 from December to May. Another processor sells nuts for NGN 3,500 from May to August and for NGN 4,000 during November to April. There are some people who sell their nuts for the same price throughout the year. Some other people even sell cheaper during the harvest season than during other seasons.

Seasonality is not likely the only factor determining shea nut price. Some processors sell their nuts for around NGN 3,500 to NGN 4,000 per 100 kg throughout the year, while some others' price is only around NGN 2,500 per 100 kg. Other factors such as quality of nuts and contract arrangement between processors and traders may explain the price differences among processors.

As for the volume of production, shea nut processors process nuts manually with a limited number of employees, and their production capacity is rather small. The average production of 12 shea nut processors interviewed in baseline survey was 120.58 bags or 12,058 kg. Meanwhile, production scale varies from processor to processor. Among 12 shea nut processors, the largest processor produces 500 bags or 50 tons, and the smallest produces only 24 bags or 2,400 kg per year.

Financial and economic status

Financial status of shea nuts processors seems to be rather weak with limited amount of capital to invest. They lack fixed assets and inventories. The majority also lacks bank deposits and liquid cash at hand. In addition, shea nut processors do not seem to practice proper financial management. No processor interviewed practiced bookkeeping. Some said that they managed finances for their business by estimate, while the others said that they had no financial management at all.

Shea nuts processors have limited access to formal loans. Out of 12 processors interviewed, only two had access to formal loans. One paid an interest rate of 12%, and the other 18%. For those who did not have access to formal loans, the majority wanted to have formal loans. One processor said that collateral required for formal loans was too high for her enterprise to meet.

Access to informal loans, on the other hand, is very different from the case of formal loans. About half of the processors interviewed have access to informal loans with no or very low interest rates. Their outstanding amounts were as small as several thousand to ten thousand naira, and their loans were lent

by immediate relatives, including parents and siblings. There seems little difficulty in obtaining informal loans from family members, but the amount may not be large enough to make major investment in their business.

2) Shea butter processors

Enterprises and their management

Value chain analysis and baseline survey were conducted with members of two traditional shea butter cooperatives in Katcha LGA. Each cooperative has 60 members, mostly women, and is registered as a cooperative. Similar to the shea nut processing cooperative described in the section above, these traditional shea butter processing cooperatives are loosely structured organizations. Members produce shea butter as individual enterprises, but they have cooperation and coordination among members in some activities. The following are example activities mentioned by traditional shea butter processors.

- Transporting materials together
- Assisting each other in finding buyers in the market
- Sharing market price and milling price
- Work together and repay each other in kind or cash
- Pooling butter from members to meet an order exceeding one's production capacity

On the other hand, some competition runs among members as well. Some processors said that they had to compete each other to buy good materials and to gain attention of buyers to their products in the market. One processor provided a good comment to explain their competition and cooperation. She said that when she found good materials for a fair price at the market, she would buy them for herself before informing others. For cooperative members, their primary concern is their own business, and after their own needs are met, they care about other members.

Production, distribution, and consumption channels

Traditional shea butter processors are micro enterprises mostly run by women in rural communities. They mainly use family labour to process shea nuts into shea butter. Most of the work is done manually, and their production capacity is generally small.

Traditional shea butter processors buy materials, processed shea nuts, from either shea nut processors or traders. Quality of shea nuts is an important factor to determine quality of butter. One processor said that shea butter extracted from germinating shea nuts would have black spots and that would affect the price of butter. Traditional shea butter processors are careful in selecting shea nuts they use. The result of baseline survey shows that the prices of shea nuts they purchase have some seasonal difference. They are slightly cheaper during the harvest season compared to other seasons, but the difference is normally a few hundreds naira or five hundreds naira at maximum per 100 kg. About half of the 24 processors interviewed buy shea nuts at the same price throughout the year. A more prominent difference is unit prices paid by different shea butter processors. The lowest price was NGN 1,500 per 100 kg, while the highest was NGN 4,600 per 100 kg. Many processors bought shea nuts for some price between NGN 2,000 and NGN 4,000 per 100 kg. Price may vary depending on the quality of shea nuts.

Traditional shea butter processing can extract more oil from shea nuts compared to mechanical processing. It is said that the traditional method can extract up to 90% of oil contained in nuts, whereas the mechanical method can extract around 40%. 100kg of processed nuts produces 50 litres of shea butter through traditional methods as against only 37.5 litres obtained from the same quantity of processed nuts using the mechanical method.

Although most part of traditional shea butter production is carried out manually, there are some machines used in the process. Actually, there used to be common processing machines provided by the World Health Organization (WHO). Because those processing machines have deteriorated over many

years, they have gone back to the traditional method. The only machine that most traditional shea butter processors use is a milling machine to grind shea nuts. They normally bring their nuts to a miller and pay for the milling service. One processor interviewed said that she used a kneading machine which she had bought by herself from a nearby town.

As for mechanical shea butter processors, they use machinery such as fryers, millers, crushers, and filters. Their products are mainly sold to cosmetic manufacturing companies in other states, including Lagos, Kano, and Ibadan. In the case of Babankogi, one mechanical processor in Bida, it sells all the butter to a manufacturing company in Kano. Besides shea butter, some mechanical processors also produce other kinds of vegetable oil such as ground nut oil, depending on the availability and price of each oil crop.

Prices and trading volumes

The price of shea butter is said to fluctuate seasonally from around NGN 2,200 per 25 litres during the harvest season to around NGN 4,000 during the off season. The result of baseline shows seasonal fluctuation in butter price. Some processors sell their products cheaper around June, July, and August compared to other months. However, about half of the processors interviewed sell their products for the same price throughout the year. The highest price was NGN 6,600 per 25 litres, while the lowest was NGN 3,000 for 25 litres.

As for the volume of production, traditional shea butter processors process butter manually with a limited number of employees, and their production is rather small. Shea butter production is higher during the harvest season because of the abundance of the nuts, and less when nuts are scarce. Some processors produce butter only during the harvest season around June, July, August, and September. Volume of production varies from one processor to another. Among those interviewed, the smallest processor produces only 10 containers in a year. One container can carry 25 litres, and this is the common unit of shea butter in the community. The largest processors, on the other hand, produced 480 containers, followed by another producing 400. The average production is around 129 containers.

As for mechanical shea butter processors, one enterprise in Bida stated that the price of shea butter is NGN 180,000 per ton during the on season, and it can rise above this price during the off season. The enterprise trades more shea butter during the on season than the off season. NGN 180,000 is equal to NGN 4,500 if converted into a unit of 25 litre used by traditional shea butter processors. Therefore, mechanically processed shea butter fetches a better price than traditionally processed shea butter.

Financial and economic status

Financial status of traditional shea butter processors appears quite similar to that of shea nut processors. Traditional shea butter processors seem to have limited amount of capital to invest as well as difficulty in accessing formal loans. Out of 24 processors interviewed in baseline survey, four processors had access to formal loans with interest rates of 9% and 12%. Instead, many processors had access to informal loans from family members. Bookkeeping practice does not exist among traditional shea butter processors. Only one processor kept a cashbook. Mechanical shea butter processors may be better funded and have easier access to formal loans.

Employed technologies and techniques

There are two ways of traditional shea butter processing. One is shea butter processing with roasted nuts, and the other shea butter processing with parboiled nuts.

Shea butter processing with roasted nuts

- After de-pulping the shea nut fruits, the nuts are washed with cold water.
- Nuts are de-husked using mortar and pestle after roasting, and winnowing for cleaning
- Crushing and milling mechanically nuts after frying using shea butter oil, and left over night to ease mixing.
- Mixing milled products with cold water for one hour and then mixing proper with warm water

- Scooping the floating paste and separation of cake with oil with foreign material
- Heating the oil part with fire wood for 2-3 hours, and stirring with spoon
- After filtering the oil part to separate oil and slush, the slush is solidified
- Packaging the solidified products using rubber paints (25 litter)

Shea butter processing with parboiled nuts

- After de-pulping the shea nut fruits, the nuts are washed with cold water and parboiling.
- Nuts are de-husked using mortar and pestle after roasting, and cleaning
- Crushing and milling mechanically nuts after sun drying and left over night to ease mixing.
- Mixing milled products with cold water for one hour and then mixing proper with warm water
- Scooping the floating paste and separation of cake with oil with foreign material
- Heating the oil part with fire wood for 2-3 hours, and stirring with spoon
- After filtering the oil part to separate oil and slush, the slush is solidified
- Packaging the solidified products using rubber paints (25 litter)

On the other hand, mechanical shea butter processors are as follows using roasted or parboiled processed shea nuts:

- Washing the processed shea nut above mentioned, and sun drying.
- After frying the processed nut using frier, milling them and extraction
- Heating the extracted oil using heater, and separation of slush by filtering
- Packaging the shea butter using polyethylene bags

3) Shea nut and butter traders

Enterprises and their management

Value chain analysis and baseline survey were conducted with some traders based around Bida. They can be divided into two categories: rural bulking agents and major bulking agents. These enterprises are dominated by men, and they employ relatives and non-relatives. Although they are not organized under any form of association, they have some coordination.

Production, distribution, and consumption channels

Same traders often trade both shea nuts and shea butter. They also trade other commodities such as groundnut and leather. Rural bulking agents buy supply from processors in community, and sell to major bulking agents and mechanical processors. On the other hand, major bulking agents sell products to manufacturing companies located in other states. Some of them also export shea nuts to Benin.

Prices and trading volumes

Price of shea nuts and butter varies depending on the quality and types of products. The result of value chain analysis and baseline survey reveals that parboiled nuts attracts higher prices than the roasted nuts. Parboiled nuts are preferred by manufacturing companies. However, roasted nuts are preferred by a mechanical processor based in Bida. The processor said that roasted nuts were easier to mill than the other types of nuts. The price also has some seasonal fluctuation. Because of higher availability of shea nuts and butter, more nuts and butter are traded during the on season.

Financial and economic status

Shea nut and butter traders are financially solvent and liquid because of large capital investment and high income generation. Some of them use formal loans. Among eight shea nut and butter traders interviewed, three answered that they have access to formal loans with an interest rate of 16%. Traders are also better at financial management compared to shea nuts processors and traditional shea butter

processors. Four traders said that they keep cashbooks, and one said that he practiced double entry bookkeeping.

(5) Issues identified

1) Government services

The government has been very supportive of shea production in Niger State. NSCEPA, as a lead agency in promotion of shea production in the state, has provided assistance mainly to shea nut processors and traditional shea butter processors in collaboration with other stakeholders, including GTZ, Ministry of Local Government, and Ministry of Agriculture.

Many government interventions have been carried out, focusing on production aspects of shea nuts and butter. For example, shea nut and butter processors in rural communities have been encouraged to organize themselves into cooperatives, and training on improved production techniques was provided to shea nut and butter cooperatives.

In addition to production issues, the government is moving towards addressing marketing aspects of shea nuts and butter. For example, NSCEPA has collaboration with GTZ and NISPA in linking manufacturing companies to traditional shea butter processing cooperatives. NSCEPA is also considering introduction of a minimum guaranteed price for shea products. Marketing assistance will be increasingly important in order for shea products of improved quality to gain access to a better market that appreciates high quality.

Another important function of the government may be coordination of stakeholders. In February 2010, NSCEPA hosted the first shea stakeholder meeting in Minna, inviting Raw Materials Research and Development Council (RMRDC), Ministry of Local Government, SMEDAN, GTZ-EoPSD, and Agricultural Development Project (ADP) to develop common understanding on who is doing what in the shea sector and to seek better coordination among stakeholders. Such coordination among stakeholders will be indispensable to create consistency and synergy among policies and activities of stakeholders.

2) Management related issues

Shea nut processors and traditional shea butter processors seem to share similar problems in financial management, and they need some improvement. For example, bookkeeping will be necessary for all shea nut processors and traditional shea butter processors in order to consolidate the foundation of their business. Expansion or upgrading of their production has to be based on sound financial management.

Another area that requires more attention in terms of management may be quality control of shea products. Shea nut processors and traditional shea butter processors may have some understanding about product quality, and some processors have received training on quality control. However, there seems to be great need for better understanding and practice on quality control if processors are looking for better market.

As mentioned earlier, quality of shea butter largely depends on quality of shea nuts, and quality of shea nuts is primarily determined by quality of shea fruits. Therefore, good quality of shea butter can be achieved when everyone in the production process understands what makes good quality. In addition, vertical integration of the production process from shea fruit harvesting to shea butter processing may also be required for production of high quality shea butter in rural communities.

3) Technical issues

Parboiling instead of roasting is recommended by GTZ as a method of processing shea nuts. Shea butter processed from parboiled shea nuts have lower Free Fatty Acid (FFA) compared to that from

roasted nuts, which is generally considered to be good in terms of quality. However, parboiling method faces a few issues. Firstly, parboiled shea nuts produce less butter than roasted nuts. 100 kg of parboiled nuts can make 25 litre of shea butter, whereas the same amount of roasted nuts can make 37.5 - 50 litre of butter. Another issue is that parboiled nuts stick to milling machine when they are crushed, and it is laborious to clean milling machine after crushing parboiled nuts.

4) Market structure

The primary problem is that shea nut processors and traditional shea butter processors have restricted access to market. Farm gate price of shea nuts and shea butter may be kept low because of the market structure. As many shea nut processors and traditional shea butter processors individually sell their products to local traders, they are left as price takers. NSCEPA and NISPA say that the price of shea nuts and butter does not meet inputs into nut and butter processing.

This pricing negatively affects volume and quality of shea nuts and butter production. For example, 70% of shea fruits in the state are not harvested because, for one reason, the price of shea nuts is too low compared to inputs, labour and materials, required in shea nut processing. Shea nuts processors therefore feel discouraged from expanding their business. In terms of quality, one traditional shea butter processor told in an interview that she had produced shea butter with an improved production method that was more costly and time consuming, but the price she received was the same as before. Quality improvement of shea nuts and butter may not result in higher price under the current market structure, and this prevents rural processors from improving quality of their products.

On the other hand, there are opportunities in the shea nut and butter market. International trade of shea nuts and butter has been increasing, and the price has been high for the last few years. Increasing use of shea butter in food items is one reason to explain market expansion. Shea butter is commonly used in the production of food items such as confectionaries and margarine. For example, up to 5% content of shea butter by weight is allowed in substitution for cocoa butter under European Union (EU) regulations on chocolate.

In addition to food items, unrefined shea butter of first grade can be used for the cosmetic and pharmaceutical industries, and that of lower grade can serve the needs of the soap-making industry (Lovett, et al., 2005). Different industries require different qualification of shea butter. For example, the following explains qualifications preferred by the cosmetic industry and the food industry (Lovett, 2004).

Cosmetic industry:

- Natural butter; i.e., without inorganic solvents used in the process and preferably with certified traceability
- Generally (but not necessarily) with low smell, colour, and FFA levels
- Consistent quality over time at stable prices
- Reliable supplies of large quantities
- High levels of unsaponifiables
- No foreign bodies

Food industry:

- Reliable supplies of large quantities of kernel or butter
- Consistent high quality (needs refining to meet regulations in the food industry)
- High steering, low moisture, no smell, no foreign matter
- Low FFA
- White
- Low unsaponifiables

Shea nuts and butter processors will need to understand what specifications are required by which industry, and to be able to produce products with quality suitable for target industries.

Box 4-1 Shea butter certifications for international trade

1. Organic (Biologique) – Defined as coming from sustainable farming systems maintained in the absence of inorganic inputs (pesticides, fungicides, fertilizers, etc.). Standards are verified by accredited organizations under regional regulation, e.g., European Union legislation (EEC No. 2092/91) and by the United States Department of Agriculture (USDA) under the National Organic Program (NOP, see below). Further information on organic agriculture can be found at: http://www.ifoam.org. This certification is voluntary; however, note that certain buyers may require or be actively looking for organically certified products.

2. Fair, Equitable or Ethical Trade – Increasingly, suppliers of agro-products are being asked whether producers received a 'fair' deal; e.g., safe working conditions, pre-financing, above local market prices for products destined for international markets, and the absence of slave or child labour. A range of options exists, from 'in-house' charters such as those that The Body Shop employs, to certification by third-party companies such as The Soil Association or the Fairtrade Labelling Organizations International. Consult the Fair Trade Federation's website for useful definitions and information: www.fairtradefederation.com. Fair Trade Federation membership is open to traders, retailers, wholesalers, and producers who strive to sell 100% fairly-traded products. This certification is voluntary, although certain buyers will give preference to, or look for, products certified as Fair Trade.

3. Quality Assurance – Typically the buyer will require third-party verification of producer quality and they may demand such technical information in advance of an order. Testing by a laboratory with international standards provides the customer with the assurance that you are providing internationally acceptable quality products. Please refer to this Guide's section on quality standards.

4. Traceability – Major retailers such as chain stores aim to reassure their customers about what happens to their products at all stages of the production process. Since January 1, 2005 the EU demands that all agricultural products be traceable from the source (Reg. 178, January 2002). Certain customs procedures also require minimal traceability documentation; i.e., "certificate of origin." In essence, successful processors and exporters need to document and keep records of all purchasing transactions, processing steps, labour utilized, dates of processing, locations, etc.

5. EurepGAP – Established by European retailers in 1997 to define the elements of good agricultural practices (GAP). It addresses areas such as Integrated Crop Management (ICM), Integrated Pest Control (IPC), Quality Management System (QMS), Hazard Analysis and Critical Control Points (HACCP), worker health, safety, welfare, and environmental pollution and conservation management. Please check www.eurep.org for further information. Over time, U.S. importers may implement these European requirements as well.

Source: Lovett, et al., 2005

As a means to prove certain quality of shea products to meet different requirements, certifications can be obtained. There are many types of certification, including national standard, organic certificate, and fair trade certificate. Box 4-1 shows shea butter certificates introduced in a shea butter export guide (Lovett, et al., 2005).

Obtaining any of the certificates may be a costly and time consuming process. For some certifications, including organic certificate, there are no institutions within Nigeria that can certify products. In such cases, it will be even more difficult to access those certifications. Meanwhile, the Standard Organization of Nigeria (SON) is developing national standards for shea nuts and butter. Certification of the national standard might be the most accessible certification for shea nuts and butter processors in rural communities.

5) Associations and cooperatives

NSCEP, GTZ, and NISPA have been assisting shea nuts processors and traditional shea butter processors to form themselves into cooperatives, upgrade their production skills, and gain access to better market. These initiatives are creating great opportunities for Niger State to fill the gap between shea nut and butter processors in rural communities and the manufacturing and export market.

Each enterprise involved in shea nut processing or traditional shea butter processing is very small in scale. They may be too small to register individually as a formal enterprise, and they also may be too small for the government to provide services individually. Cooperative can be an effective and efficient means to upgrade and standardize shea nut and butter production of micro enterprises.

Since the production scale of each shea nut and butter processor is very small, cooperatives can play a significant role in gathering products from members to meet large orders. Some shea nut and butter processors already have cooperation in supplementing each other's products to meet their local traders' needs. EoPSD and NISPA also have an arrangement to link between companies buying shea butter and traditional butter processing cooperatives. In order to increase collective marketing, institutional capacity of cooperatives will need to be strengthened.

6) Infrastructure

For shea nut processors and traditional shea butter processors, high cost of transportation and storage are often mentioned as problems. Many of them also lack access to adequate water supply. As for mechanical butter processors, intermittent electricity supply and high cost of transportation are the two major issues. Traders, on the other hand, raise inaccessibility to rural communities and high transportation cost as their concerns.

Improved supply of electricity, water, and road network are difficult issues to address. It may be more realistic to consider the situation as an opportunity to develop efficient production techniques to use less electricity and water, or to create collective shipping arrangement to reduce individual transportation cost.

4.2.3 Groundnut oil in Niger State

(1) Current situation of BDSPs

There is no business development services provider (BDSP) specialising in groundnut oil processing in Niger State. General business training is provided by both public and private BDSPs. Niger State Agricultural Development Project (NSADP) provides unified extension services under training and visit system to groundnut farmers and processors on agronomic and cultural practices as well as post-harvest handling activities and processing. NSADP also promotes group mobilisation and institutional linkage of groundnut enterprises.

(2) Types of clusters and their characteristics

The place where the groundnut cultivation and groundnut oil processing are concentrated in Niger State is Kontagora area. Based on the findings of the value chain analysis, three types of clusters were

identified in Kontagora groundnut oil value chain: groundnut traders, groundnut oil processors, and groundnut oil traders. Groundnut oil processors are classified into two categories by processing method: mechanical extraction and traditional processing.

1) Groundnut traders

Groundnut traders buy the groundnut directly from farmers. The farmers sell a part of their fresh harvest, and store the rest in bags after drying.

At the time of harvest (during the rainy season) fresh groundnut procured from the farmers are sold without any further processing to consumers either in Kontagora town or to traders in Kano, Kaduna, and Katsina States because humidity is high and drying the fresh groundnut is difficult. During the dry season (after harvest), the farmers supply the traders with unshelled groundnut that are dried and packaged in bags.

On season of the groundnut is the period from September to March, which is the dry season when humidity is low and drying the groundnut can be done quickly. Off season is the period from March to September, which is the rainy season when humidity is high and the farmers' supplies have been exhausted.

A single groundnut trader can obtain 20 to 50 bags of unshelled groundnut per week during off season. The volume can increase to as high as 100 to 200 bags per week during on season. The groundnut traders process the groundnut by shelling and packaging them in 120kg bags. There are about seven shelling plants located at the outskirts of the town. On average, four bags of unshelled groundnut make a bag of shelled groundnut. It costs just about 10 naira to get a bag of groundnut shelled. The owners of the shelling machines also make money by milling the shells and selling it to traders from Sokoto State as animal feed. A bag of the milled shell costs about 1,000 naira. When the rains come, the remaining heap of shells is turned into manure.

2) Groundnut oil processors

The groundnut oil processors can generally be divided into two categories.

- Traditional groundnut oil processors
- Mechanical groundnut oil processors

The traditional groundnut oil processors form a cluster that also exists within Kontagora town. Because the traditional method of extraction involves the use of pestle and mortar, and also frying of the cake, it has been a job for the women. Like most traditional occupations, it is handed down from parents to siblings. Hence all the households engaged in traditional groundnut oil processing are known in the community. These enterprises are very important in that they perform two functions. Apart from extracting oil from the groundnut, they also sell the oil directly to consumers within Kontagora town. Thus, they are also groundnut oil retailers. Because their capacity is very low, especially during off season, their supply is supplemented by that of wholesalers that buy from Coutonou, capital of Atlantique Province, Republic of Benin, and sale to retailers within Kontagora town. About 10% of groundnuts traded within Kontagora are used up by the traditional groundnut oil processors.

Box 4-2 Mudu - a unit of measurement

"Mudu" is a bowl and also a unit used to measure volume of agricultural commodity in Niger State. Mudu is certified by the Government of Niger State, and is commonly used by traders and oil processors at local markets. Other measuring instruments are not commonly used.

An important by-product of the traditional processing method is groundnut cake. This is a delicacy in the northern part of the country. Consumers within the town buy these cakes from the traditional processors for home consumption. Also bulking agents from the south come to buy this product. They go round the households involved in traditional method of groundnut oil processing to collect the product and package in bags for ease of transportation. The cakes are sold at 1 naira per piece prepared with salt and 5 naira for 3 pieces prepared with sugar.

The mechanical groundnut oil processors also exist within Kontagora town. They operate on a larger scale. These enterprises are dominated by men. There are about twenty of these enterprises scattered around Kontagora town. The high procurement cost of machinery used and the cost of maintenance limit the number of enterprises available. The mechanical method of groundnut oil production produces two by-products: groundnut cake and sludge. Unlike that of the traditional method, as the cake produced in the process of mechanical extraction is not edible, it is used as animal feed. On the other hand, the sludge is used by local enterprises for the production of soap. On average 120kg of groundnut yield approximately 70 litres of oil using the mechanical oil extraction.

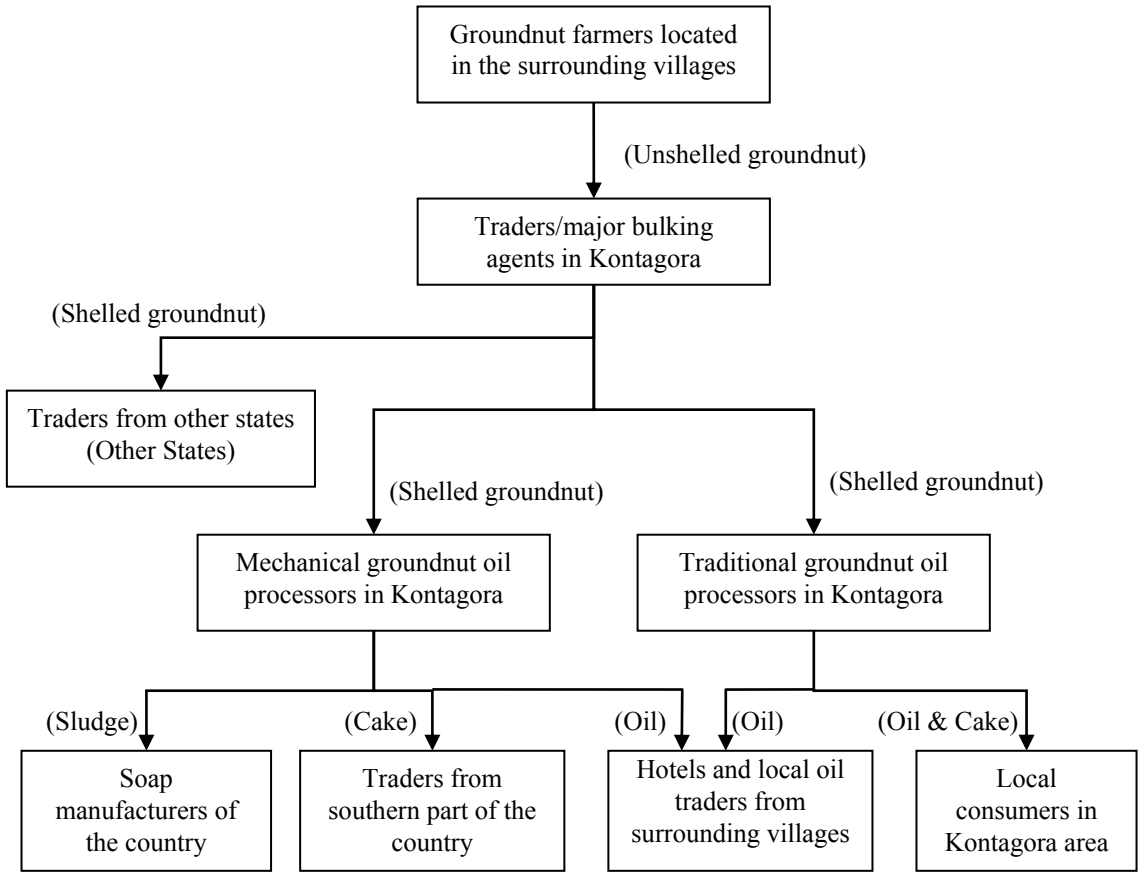
3) Groundnut oil traders

There are three categories of groundnut oil traders in Kontagora area: wholesalers, local bulking agents, and retailers. Wholesalers import groundnut oil from Republic of Benin to supplement local supply. Local bulking agents come from the surrounding villages, collect groundnut oil from the mechanical and traditional processors, and sell it to the consumers in their villages. Retailers purchase groundnut oil from the mechanical and traditional processors within Kontagora Market, and sometimes from the wholesalers, and sell it in Kontagora Market. For the value chain analysis, the wholesalers and local bulking agents are not included in the target clusters because the wholesalers sell imported groundnut oil in Kontagora area, and customers of local bulking agents are limited to farmers living in the villages producing the groundnut. Table 4-21 shows the prices of groundnut and oil by type and season in Kontagora area. Figure 4-8 shows the value chain of groundnut oil and by-products in Kontagora area.

Table 4-21 Price of groundnut and oil by type and season

No.	Type of material	Price (naira)	
		On season	Off season
1	Dry unshelled groundnut (100kg bag, about 70 mudus)	2,000	4,000
2	Shelled groundnut (120kg bag, about 95 mudus)	9,000	19,000
3	Groundnut oil (bottle)		
	Traditional	160	200
	Mechanical	150	180
4	Groundnut oil (25ltr jerry can)		
	Mechanical	6,700	7,200

Source: Project Team



Source: Project Team

Figure 4-8 Value chain of groundnut oil and by-products

(3) State-wide distribution of clusters and enterprises

Kontagora, located in Zone C of Niger State, is the largest producer of groundnut in the state. Based on the results of value chain analysis, it is estimated that about 10% of groundnut procured by the traders is sold to groundnut oil processors within Kontagora. The balance of 90percent is sold outside the state especially to Kano, Kaduna and Katsina States. Though Kontagora may not be the highest producer of groundnut in the country, it is known for its continuous supply throughout the year.

In the case of groundnut oil, 100% of oil produced by the traditional processors is sold to consumers within Kontagora town in addition to about 5% of oil produced by the mechanical processors. About 45% of the oil produced by the mechanical processors is sold to bulking agents that supply oil to the surrounding villages while the balance of 50% produced is supplied to hotels outside the state, mainly those located in Abuja and Kaduna.

(4) Characteristics of Kontagora value chain

Kontagora is the area where many crops are transported from the surrounding villages and traded. Groundnuts are one of the major crops traded in Kontagora area. The unshelled groundnuts are collected by the groundnut traders from the farmers in the surrounding villages. There are three clusters: groundnut traders, groundnut oil processors and groundnut oil traders. The groundnut oil processing cluster is composed of traditional groundnut oil processors and mechanical groundnut oil processors.

1) Groundnut traders

Enterprise and their management

Value chain analysis and baseline survey were conducted with groundnut trading sub-group members of Nagari Nakowa Multipurpose Cooperative Society in Kontagora LGA. The number of registered member in the sub-group is 62 enterprises. As groundnut is a seasonal crop, cooperative activities of groundnut trading is also seasonal. Groundnut trading enterprises are mostly managed by individuals or farm households. The cooperative society provides the members with assistance when need arises. Society members lend money each other, and cooperate in selling the groundnut when the market price is low.

The groundnut trading enterprises are mostly carried out by individuals or farm households, and are managed by mostly men who rely heavily on family labour for the business. The scale of operation varies with season and availability of storage facilities. The enterprises are not well managed. There is no evidence of planning and evaluation. Some of the traders doing bookkeeping by double entry or cash book, however, majority of them do not practise bookkeeping and do business by estimation.

Production, distribution, and consumption channel

As shown in Figure 4-9 there are generally three main varieties of groundnut found in Kontagora area. These include Yar kasa, Yar dakar/makwa and Kampala. With increasing demand for groundnut with high oil content, most of the farmers have turned to cultivating the multi-coloured variety, Kampala, which is said to have higher oil content than Yar kasa and Yar dakar/makwa. According to the results of the value chain analysis, a maximum of 3,000 bags (5 trailers) can be procured from each of villages for one season.

Yar dakar/makwa Kampala Yar kasaSource
Source: Project Team

Figure 4-9 Groundnut varieties found in Kontagora area

Most traders in Kontagora area sell the groundnut to buyers from other states, for example Kano, and the traded volume accounts for 90% of total production in the area, while the reaming are sold to or utilised by both traditional and mechanical oil processors in the town. Usually, the traders hire the trucks for transportation and share the cost among them. Previously, they have their own transportation vehicles and hire drivers. However, it sometimes caused money-related trouble with drivers and they concluded that hiring transportation is less risky.

Prices and trading volumes

Majority of the traders purchases up to 90 tons (720 bags) in a month. The purchasing price from the farmers ranges between 100,000 to 120,000 naira per ton, depending on the season. The purchasing price of unshelled groundnut per mudu is 40 naira during on season, and 60 naira during off season. Small farmers who do not have any storage facilities sell the unshelled groundnut immediately after harvesting, while larger farmers who have storage facilities dry and store the unshelled groundnut after harvesting and sell the groundnut when the price is high. Shelling cost is 1,600 naira per ton. Transportation cost ranges from 3,200 to 5,000 naira per ton, depending on the distance and location

of the markets. The stock of the groundnut by the traders ranges from 1.5 tons per traders for off season to 2-3 tons for season. Selling prices by species are 190 naira per mudu for Yar Dakar/makwa, 200 naira for Kampala, and 170 naira for Yar kasa.

Financial and economic status

Generally, the capital base of most enterprises is very small, ranging between 2,000 to 500,000 naira. Their average bank deposits range between 50,000 to 150,000 naira. Most of them lack tangible assets, and there is no evidence of liability on them. They only buy and sell the groundnut depending on their liquidity and solvency at a particular point in time. According to the results of baseline survey, some of the respondents have access to informal loans and the major source of the informal loan is immediate family such as parents and brothers. Most of them are interested in obtaining loan from a bank. Some of them practise dealings on credit; however, such a type of transaction is not common.

Employed technologies and techniques

There are about seven shelling plants located at the outskirts of the town. Machines used in the shelling plants crack shells of the groundnut and segregate the nuts and shells (Figure 4-10). The groundnut traders bring the groundnut to the shelling plants for shelling the groundnut they purchased from the farmers in the surrounding villages.

Shelling machine

Shelled groundnuts

Source: Project Team

Figure 4-10 Shelling plant

2) Traditional groundnut oil processors

Enterprise and their management

Value chain analysis and baseline survey were conducted with a women society engaged in groundnut oil processing in Kontagora LGA. The number of registered member in the society is 63 enterprises. However, they do not have actual collective action for their business. They have cooperation in sharing information on raw materials at lower price and buyers. The enterprises are operated by women. They are normally housewives and learnt the oil processing and trading from their mother or female relatives. Since majority of them did not received formal education, they do not have any financial records. Since the households doing oil processing business are known to the local residents, they do not need to advertise their products.

Production, distribution, and consumption channel

The traditional groundnut oil processors buy the shelled groundnut from the traders in the local markets. They use 75cl bottles as unit of measure. On the average, 15 to 17 bottles of groundnut oil (about 12 litres) and 1,000 naira worth of cake (*kuli-kuli*) can be obtained from 20 mudus of shelled groundnut. A single woman can process a maximum of 20 mudus of shelled groundnut a day.

Major items of production cost include raw materials, labour, milling, and firewood. The traditional processors do not have to pay for transportation of raw materials because the traders bring the groundnut to their houses. Buying price of the shelled groundnut is 210 naira per mudu in off season and 100 to 150 naira per mudu in on season. It is necessary to hire a worker to help them in shaping the cakes. This costs them approximately 100 naira. The cost of firewood is 100 to 170 naira for processing 15 mudus of groundnut

Three traditional processors interviewed in the value chain analysis hire the milling machine to process the raw groundnut into paste. Two of them are interested in using processing machines to improve their production, while one answered that she was satisfied with the capacity of her production because she has time for her family.

Table 4-22 shows the average production by groundnut variety. According to the results of value chain analysis, the traditional processors use a different variety of groundnut to improve quality of their products.

Table 4-22 Average quantity of oil production by groundnut variety

Variety	Quantity	Average quantity of oil produced (bottle)
Yar Dakar	20 mudus	14
Kampala	20 mudus	16
Yar kasa	20 mudus	12

Source: Project Team

Consumers come to buy the products directly from the processors. Some of them sell their products at the local markets (Figure 4-11). On the other hand, a larger portion of the cake is sold to bulking agents from southern part of the country or Ibadan.

Sale of groundnut oil

Sale of groundnut cake

Source: Project Team

Figure 4-11 Sale of groundnut products produced by traditional method

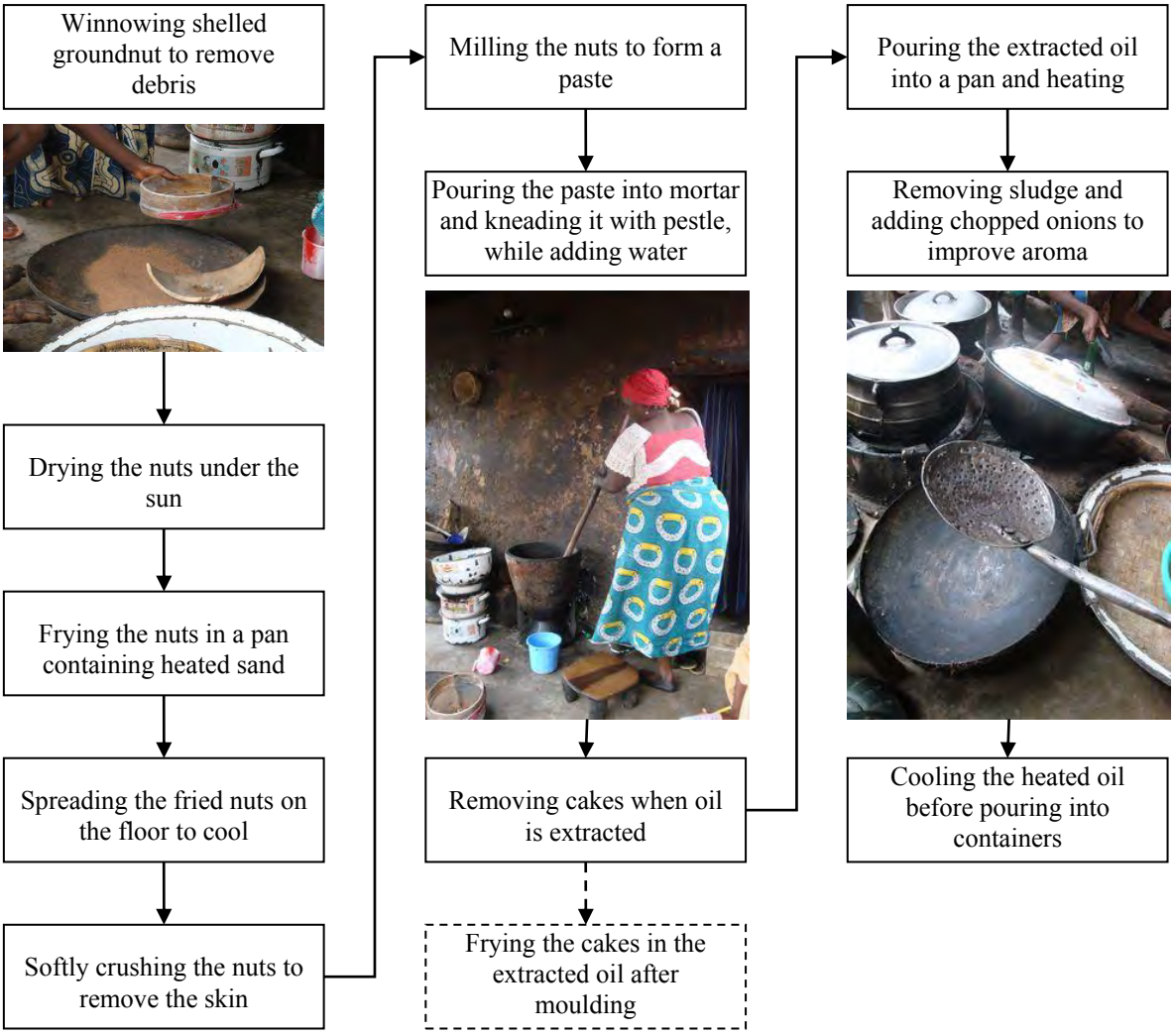
Prices and trading volumes

The oil price fluctuates in proportion to price change due to scarcity of the raw groundnut. A bottle of groundnut oil costs about 250 naira during off season and the price declines to 130 naira during on season. The price of oil processed by the traditional method is higher than that by the mechanical method. Annual trading volume varies from about 700 bottles to 2,000 bottles, depending on

availability of the raw groundnut and their financial capability. There is a traditional processor who can sell over 8,000 bottles a year.

Financial and economic status

According to the results of the value chain analysis, profit from the business increases due to high demand. However, the traditional processors do not have enough capital to invest in machinery for processing. The results of baseline survey indicate that some of them practise the dealings on credit due to lack of cash, and in general, access to loan is very limited for them. Some of them obtain loan from informal sources such as immediate family.



Source: Project Team

Figure 4-12 Major steps of traditional oil processing in Kontagora area

Employed technologies and techniques

The traditional processors use bolter and pan for pre-treatment, and mortar and pestle for kneading. The traditional method of groundnut oil processing is a time consuming activity. On average, it takes about 9 hours to process 20 mudus of the groundnut into oil and cakes. The major steps of traditional oil processing are shown in Figure 4-12.

3) Mechanical groundnut oil processors

Enterprise and their management

Value chain analysis and baseline survey were conducted with Kontagora Small Scale Groundnut Producers and Marketers Multipurpose Cooperative Society in Kontagora LGA. The number of registered member in the society is 20 enterprises. More business persons enter into the mechanical groundnut oil processing business and increase demand for the raw materials. Unlike the traditional groundnut oil processors, mechanical oil processors are managed by men and operate processing machines ranging from 1 to 5 mills. Their capital investment varies from 10 to 80 million naira and they have operation staff.

According to the results of baseline survey, a major type of bookkeeping is cash book and all the respondents keep financial records.

Production, distribution, and consumption channel

Oil processing is more active during the dry season because of high availability of the raw groundnut. The volume of oil obtained from the raw materials by the mechanical method is higher than that by the traditional method because of efficiency of extracting machines. According to the results of the value chain analysis, one 125kg bag of the shelled groundnut gives 50 litres of the groundnut oil. In terms of distribution channel, 60% of oil produced by the mechanical processors is sold to the groundnut oil traders in Kontagora area and the remaining 40% is sold to hotels in Kontagora, Minna, and Abuja.

Major items of production cost include raw materials, labour, electricity, operation, and maintenance. The purchase price of the raw groundnut is NGN 120 to 150 during on season, and 180 to 200 naira during off season.

Prices and trading volumes

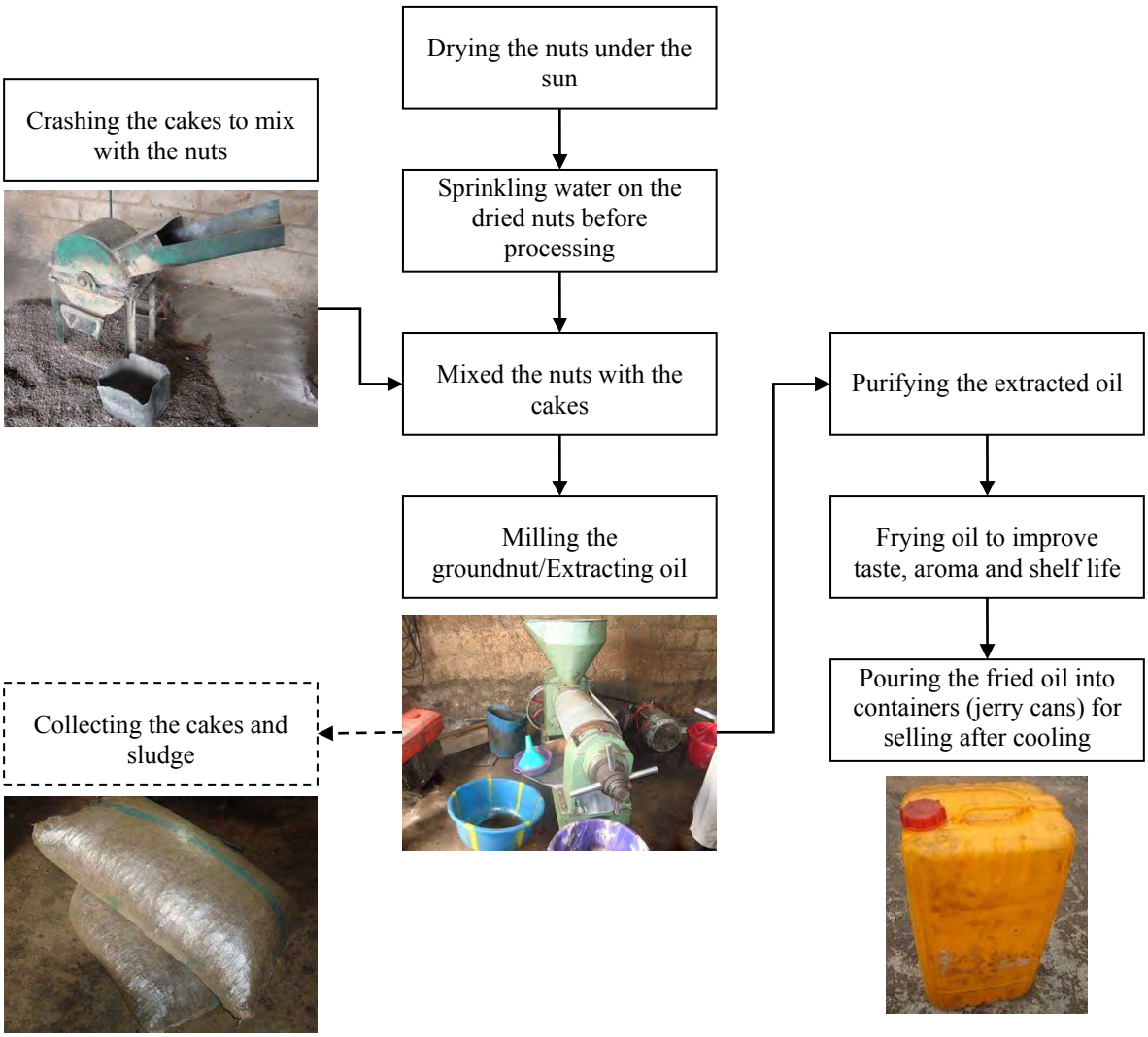
Oil price and trading volume depend on availability of the raw groundnut. The oil price is low during on season. One 25 litres jerry can of the groundnut oil is sold at NGN 6,000 to 7,000 during on season, and NGN 8,000 to 10,000 during off season.

Financial and economic status

Unlike the traditional groundnut oil processors, mechanical processors have tangible assets as well as fixed asset such as land. The enterprises practicing double entry bookkeeping have access to formal loans from commercial banks with 16% of interest rate. Dealings on credit (DOC) are common in the area. Generally, DOC accounts for 5% of monetary transactions. Some of them prefer cash-based transactions to avoid risk of default.

Employed technologies and techniques

The groundnuts purchased during on season are normally well dried. If not dried, the shelled groundnut are spread on the floor and dried under the sun. Water is sprinkled on the dried groundnut before processing. The mechanical processors generally use the oil extracting machine made in China or India. The machine crushes and extracts oil at the same time. It has a feeder and two outlets. The groundnut oil extracted is collected from one outlet and the cakes from the other one. The major steps of mechanical oil processing are shown in Figure 4-13.



Source: Project Team

Figure 4-13 Major steps of mechanical oil processing in Kontagora area

4) Groundnut oil traders

Enterprise and their management

Value chain analysis and baseline survey were conducted with Nagari Na Kowa Multipurpose Cooperative Society in Kontagora LGA. The number of registered member in the society is 58 enterprises. This type of enterprise is of sole proprietorship dominated by both men and women. The size of the enterprise is relatively small. However, some medium scale enterprises, whose businesses are managed by their family members (mostly children), exist in the area. Trading of oil is done on open field by the road sides of the market. Generally, they do not have any proper storage facilities, thus, they use their house as storage or keep their products outside. They also do not keep any records of activities and most information is still based on memory recalls. Their business activities are haphazard and poorly coordinated.

Production, distribution, and consumption channel

Groundnut oil trading in the area is in the system of buying in bulk (25 litres jerry cans) and sold in units (0.75 litres bottles). The enterprises usually purchase the groundnut oil within Kontagora area

and sometimes from the wholesalers who import the oil from the Republic of Benin to supplement local supply. They sell the groundnut oil to households within Kontagora area. The groundnut oil sold by them are consumed locally in meal preparation such as frying of meat or fish, frying of groundnut/bean cake as well as an ingredient for cooking and frying rice. They have adequate volume of oil stock at all times to sell the groundnut oil to their customers. Major cost items include groundnut oil, transport, and shop rent.

Prices and trading volumes

A price of groundnut oil varies from one season to another, depending on availability of the raw groundnut. Based on the results of the value chain analysis, one jerry can (25 litres) of the groundnut oil costs between NGN 5,000 to 5,900 during on season, and NGN 6,500 during off season. Similarly, one bottle (0.75 litres) of the groundnut oil is sold at NGN 140 to 150 during on season, and NGN 160 to 180 during off season. Although there is steady demand for the groundnut oil all year around, more volumes are traded during festivals like fasting, Christmas celebration, Easters, etc.

Financial and economic status

Capital base of the enterprises is relatively small. Their cash at hand ranges from NGN 2,000 to 50,000, while majority of them lack savings in the banks and other financial institutions. They lack tangible assets including fixed assets. There is no evidence of liabilities as they hardly buy on credit terms for fear of being default. They also lack credit facilities in the area.

Employed technologies and techniques

The groundnut oil traders usually sell the groundnut oil, using containers called as “jerry can” and glass bottles. They bring the containers to the traditional and mechanical processors to buy the groundnut oil. The only available technique to detect good quality oil is testing and smelling of the oil aroma. Any other technologies and techniques are not employed. According to the results of the value chain analysis and baseline survey, some of them are willing to enter into groundnut oil processing business and obtain the oil extraction machines. However, their financial constraints do not allow them to realise the investment.

(5) Issues identified

1) Government services

As mentioned in Subsection 7.3.1, NSADP provides unified extension services under training and visit system to groundnut farmers and processors. There are some public institutions responsible for providing business development services, such as Technology Incubation Centre and Business Information Centre in Niger State. However, those institutions are located in Minna and access to the services provided by those institutions is limited, especially for people living in rural area.

In addition, government services are provided to cooperative societies and formulation of cooperative societies by informal individual enterprises is promoted. This means that individual informal entrepreneurs have no opportunity to receive the government services.

2) Management related issues

Management encompasses the process of organisation planning, coordinating, staffing, implementing and evaluation. In relation to the above concept of management, most of the groundnut-related enterprises do not have the capacity of planning, and some of them lack organisation. For example, although limited number of the mechanical groundnut oil processors do bookkeeping or keep cashbooks, majority of the processors do not practice record keeping. Investment in human resources development is very low, and modern business management skills are not practiced by the processors.

3) Technical issues

Adoption of improved technologies is not considered by traditional oil processors in their operations. The traditional oil processors utilise the services of commercial milling machines for grinding the groundnut. If they have access to microfinance, they can purchase a milling machine. However, efficiency gain with the machine by the processors needs to be carefully examined to secure their economy of business.

Inferior quality shaft worn down quickly

Gear box and feeder shaft

Source: Project Team

Figure 4-14 Extracting machine with technical problems

Mechanical processors employ the use of several number of extracting machines for their operations. However, they also face a number of technical problems (Figure 4-14). For example, the component parts of the machines easily wear and tear, and spare parts are either not available or are costly. This situation can be improved by providing milling machines that are locally fabricated with parts made of high grade metal. In addition, provision of spare parts needs to be secured. Design of milling machine currently available in the area is not suitable for food production from the point of view of food sanitation. The groundnut oil can be contaminated by the lubricating oil for the gear box in the process of oil extraction. Another technical problem faced by the mechanical processors is that they require large volume of raw materials (groundnut) that will keep them in operation throughout the year, and this has been difficult to achieve. Therefore, most of the mechanical processors shut down their factories or operate below processing capacity.

4) Market structure

The market structure of the groundnut-related enterprises is organized into groundnut trading, oil processing, and oil trading. Some of raw groundnut traders and oil traders have an intention to invest in oil extraction businesses. This vertical integration of the groundnut oil business may result in its increased productivity. However, such vertical integration of business requires financial resources and well-organized management practices. With respect to the situation that there are numerous micro enterprises and small number of medium scale oil processors, certain level of vertical integration of groundnut oil value chain should be tested as a part of the policy options. Such vertical integration may result in improved efficiency of businesses and value addition, or hinder poverty alleviation due to skewed distribution of the value. Thus, it should be carefully tested the measures to enhance the vertical integration to reduce the production cost and make the oil price competitive although it would lead decrease in number of the enterprises.

5) Associations and cooperatives

There are several cooperative societies for groundnut oil enterprises in Niger State. However, societies of the traditional oil processors are not active. This can be attributed to the fact that they are formed to formalize informal businesses to be recognized by the government, and that members of the societies are households conducting micro-business independently. To provide BDSs efficiently, such characteristics of the societies needs to be understood, and unnecessary public services for enhancement of collective actions of the society should be avoided. In turn, the societies should be mobilized to support individual members and their businesses. In the light of interest of individual enterprises, collective actions should be determined through consultation with the members and stakeholders. For example, collective acquisition, transportation, and processing of raw materials can be proposed and tested. It can be tested whether the provision of BDSs to the society to collectively resolve disputes among the members and to ease business risks is, in fact, cost effective. Collective lobbying may be required to improve their business environment.

Proposed collective actions to be tested for the oil processing cooperative societies are 1) to purchase the raw materials collectively, 2) to sell the products collectively, and 3) to process the oil collectively. As for the raw groundnut traders and oil traders, sharing the storage facilities is also one of the possible collective actions.

6) Infrastructure

Infrastructure in the survey area is inadequate and poorly maintained. Access roads, power supply, lock-up shops, water for processing activities, and storage facilities need improvement. In addition, drainage facilities in the local markets are poor and the markets are not hygienic. Needs for the provision of stable power supply are recognized by all business enterprises. Since poor power supply hinders the modernization of business and production facilities, the lost opportunity by the poor power supply can be estimated huge. The problem which can be addressed by the Technical Cooperation is that the standards, standard unit of measurement, and use of appropriate measuring equipment are not well adopted by the market. This may cause asymmetric information situation in the market resulting in sub-optimal value addition by enterprises involved. Pilot projects can be designed to promote adoption of the standards and used of appropriate measuring equipment.

4.2.4 Yam in Niger State

(1) Current situation of BDSPs

There is no business development services provider (BDSP) specialising in yam in Niger State. General business training is provided by both public and private BDSPs.

Niger State Agricultural Development Project (NSADP) is involved in providing unified extension services delivery under training and visit system. Farmer group approach is adopted for yam producers to meet their production development needs. NSADP extension staff mobilises yam producers in formation of cooperative societies, registration and training, in addition to their primary function of technology extension. The office under Fadama II project provides training on modern method of yam storage, processing, and marketing.

(2) Types of clusters and their characteristics

The place where the yam cultivation and yam flour processing are concentrated in Niger State is Paiko area which is the city centre of Based on the value chain analysis three clusters were identified in Paiko yam value chain: fresh yam tuber traders, yam flour traders, and fresh yam tubers wholesalers. Because processing of yam flour is carried out by private millers who are general processors of agricultural commodities, those millers are not included in the value chain analysis.

1) Fresh yam tuber traders

Fresh yam tubers traders purchase fresh yams directly from farmers. The farmers transport the fresh yams to Paiko market to sell their fresh harvest, and store the rest for seedling.

Fresh yam trading season is the period from September to March and off season is the period from April to August. August is the harvesting month of yam tubers. Fresh yam tubers are traded in bundles of 100 pieces, called as heap or 'kwarya' in local name.

It is said that the farmers hold a festival to celebrate yam harvest prior to trading and consumption of new yam tubers. Generally, people prefer the fresh yam tubers stored for several months. The stored yam is drier and sweeter than new yam. Price of the stored fresh yam tubers with less water content is higher than that of new yams.

Freshly harvested yam tubers consist of about 70% water, 25% starch, 1 to 2% protein and a trace of sugars and vitamins. The most common forms of yam consumption are boiled yam and pounded yam. Boiled yam is consumed by boiling the tubers before or after peeling in water. It is consumed with oil, stew or vegetables. Pounded yam is made from boiled yam or yam flour. The boiled yam is pounded in a mortar to produce a paste. The yam flour is stirred in boiling water over a fire to produce a paste. The yam flour is made by drying thin slices of the peeled tubers and milling the dried pieces. The dried yam flour can be stored for several months. Other processed forms of yams include yam chips.

2) Yam flour traders

The yam flour enterprises were originally headed by wives or female relatives of the farmers. They obtain the raw materials from the husband's farms or from neighbouring farmers. The raw materials used for yam flour processing are the tubers which are too small to be sold profitably in the market, or are broken or rotten tubers not suitable for marketing. On average, four bundles of small sized yams (400 pieces) make 1 bag of dry yams. A bag of dry yam is milled to about 40 mudus of flour. It is perceived that trading yam flour is more profitable for the enterprises than drying and processing yams.

3) Fresh yam tuber wholesalers

The wholesalers secure their purchases from farmers through frequent visits to the farmers. Their trading volume is larger than those of fresh yam tuber traders. The yam tuber wholesalers are dominated by women, although there are a number of men that are entering into the business.

The prices of yam products fluctuate seasonally. Table 4-23 shows the prices of yam and yam products by season in Paiko area.

Table 4-23 Price of yam and yam products by season

No.	Type of material	Price (naira)	
		On season	Off season
1	Farm gate price:		
	Medium-size tubers (100pcs)	6,000 – 10,000	20,000 – 25,000
	Large-size tubers (100 pcs)	12,000 – 13,000	50,000 – 60,000
2	Wholesale price:		
	Medium-size tubers (100pcs)	9,000 – 15,000	30,000 – 25,000
	Large-size tubers (100 pcs)	20,000 – 22,000	70,000 – 100,000
3	One bundle of small sized fresh yam tubers for processing into dry yam pieces	800	6,000
4	One bag of dry pieces of yam	2,000	3,500
5	One bag of yam flour	3,200	5,200

Source: Project Team

(3) State-wide value chain of yam

Zone B has the highest concentration of clusters and enterprises involved in the farming, buying and selling of yam tubers in the entire state. A maximum of three trailer-full of yam can be obtained from one producer/farmer (1 trailer can transport about 8,000 bundles or 800,000 pieces of yams). A minimum of 10 bundles (1,000 pieces) can be procured from a single producer during one season.

It is estimated that about 30% of yam tubers produced is consumed in the state while the rest of 70% is sold to other states. Buyers from the following states and cities purchase fresh yam tubers from wholesalers in Paiko. The three major areas known for interregional trade of yam from Niger State are Abuja, Ibadan, and Lagos.

- Abuja
- Anambra
- Ibadan (Oyo State)
- Jos (Plateau State)
- Zaria (Kaduna)
- Kano
- Lagos
- Port Harcourt (Rivers)
- Sokoto
- Zamfara

4.6.4 Characteristics of Paiko value chain

Paiko is located at about 22 km south of Minna which is the capital of Niger State. More than 90% of the farmers in the area are engaged in yam production and storage for their consumption, income generation, and security for obtaining loans in times of need. The farmers come to Paiko market to sell the fresh yam tubers to the fresh yam tubers traders. Processing of yam flour is carried out by private millers that make flour from a variety of agricultural commodities. Figure 4-15 shows the value chain of yams and yam products in Paiko area.

1) Fresh yam tuber traders

Enterprises and their management

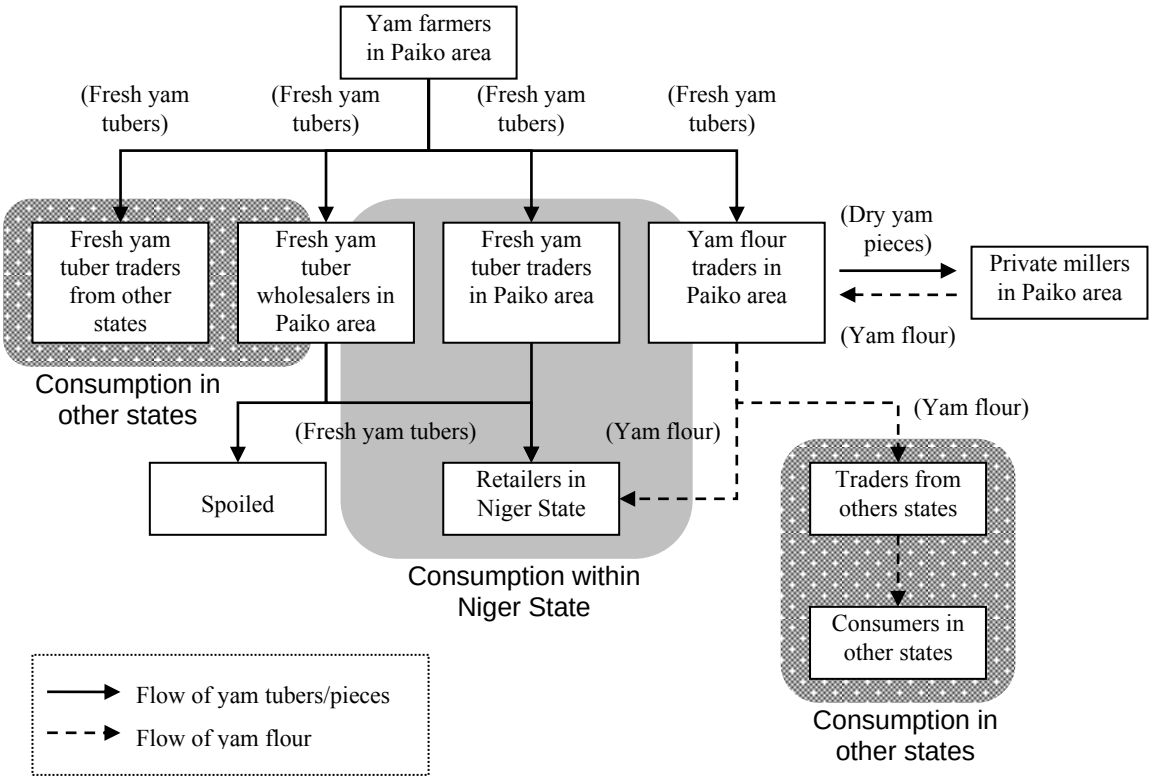
Value chain analysis and baseline survey were conducted with the sub-group members of fresh yam tubers trading under Dadin-Kowa Cooperative Society in Paikoro LGA. The number of registered member in the sub-group is 31. Yam trading enterprises in Paiko area is dominated by men who heavily rely on family labour. They are not well organised and coordinated in their business activities. The enterprises are not formally registered. Market information sharing among the society members are rarely practiced, and majority of them do not practise bookkeeping and do business by estimation.

Production, distribution, and consumption channels

The fresh yam tuber traders procure the fresh yam tubers in Paiko market on weekly basis. Paiko market of fresh yam tubers is open for 3 days per week: Wednesday, Thursday, and Friday. The major yam varieties are Dan-onitsa, Pepa, Bankose, Lagos, Talabe, and Yangbeje. The species most preferred by the traders in Paiko area is Dan-onitsa.

Fresh yam tubers are distributed throughout the year, and larger supplies of the fresh yam tubers are observed during the period from November to February than the other periods. Seventy percent of the fresh yam tubers produced in Niger State are transported to other states such as Sokoto, Oyo, Lagos, Abuja and Kano. The remaining 30% are either consumed locally or stored as yam seed tubers for next planting season. Some of them are spoiled due to poor storing conditions.

In the past, trading volume of the fresh yam tubers was 30 trailers (900 tons) per week and currently it increased to 50 trailers (1,500 tons) per week. The number of customers also increased threefold, compared to that for 5 years ago.



Source: Project Team

Figure 4-15 Structure of value chain of yams and yam products in Paiko area

Prices and trading volumes

Prices of the fresh yam tubers fluctuate within the year as well as from one year to the next. The prices are lower during the peak season from November to February, and higher at lean period, especially during the time of planting for new season (from March to May). The price of one heap (100 tubers) of the fresh yam tubers varies, depending on the season and the conditions. On average, the prices of one heap of the fresh yam tubers by size are shown in Table 4-24.

Table 4-24 Price of fresh yam tubers by size

	Price by size (naira per heap)		
	Small	Medium	Large
Peak season	25,000	30,000	40,000
Off season	50,000	60,000	80,000

Source: Project Team

Financial and economic status

Capital base of the fresh yam tuber traders ranges from NGN 50,000 to 700,000. They lack tangible assets such as stores and motor vehicles. Most of them avoid loans from formal sources because they lack tangible collateral and never want to go into default. Therefore, they depend solely on equity capital for their enterprises or informal source loans from immediate family such as parents and brothers. According to the results of the baseline survey, however, some of them practise dealings on credit with suppliers.

Employed technologies and techniques

Most of the yams produced in Paiko area are stored in barns in the form of the fresh tubers. The barns are the common form of storage for the fresh yam tubers in the area (Figure 4-16). They inspect the barns frequently to remove rotting tubers and sprouts to keep the fresh yam tubers in good condition.

Yam storage

Yam market

Source: Project Team

Figure 4-16 Yam storage and yam market

They do not have vehicles for transport of the fresh yam tubers because the farmers transport their products to Paiko market and the customers also come to buy the fresh yam tubers. The only technique using is physical observation of the fresh yam tubers to detect quality products. The fresh yam tubers with smooth surface are traded with higher price irrespective of size of the tubers.

2) Yam flour traders

Enterprises and their management

Value chain analysis and baseline survey were conducted with the sub-group members of yam flour trading under Dadin-Kowa Cooperative Society in Paikoro LGA. The number of registered member in the sub-group is 21.

The enterprises belonging to the cooperative society are mostly carried out as household business. Heads of the household (usually men) provide the raw materials (yams) and their wives process them into dry yam pieces. After milling of the dry yam pieces at the private millers, the men take the yam flour to local markets for selling. The decision of selling the yam flour is done by the family or household head. According to the results of the baseline survey, majority of them do not practise bookkeeping and do business by estimation.

Production, distribution, and consumption channels

Generally, the enterprises produce 12 to 13 bags of yam flour per week and up to 50 bags per month, depending on the availability of the raw materials and their capital base. According to the results of value chain analysis, about 90% of the yam flour produced in the area is sold to major consuming centres such as Irorin, Ibadan and Lagos, while the remaining 10% are consumed within Niger State. Most of the consumers in the state are hotels and restaurants.

Prices and trading volumes

On average, one bag (100 kg) of yam flour is sold at NGN 7,000. The price per bag could rise above NGN 10,000, depending on the availability of the raw materials. Usually, the yam flour with brighter colour is traded with higher price, compared to the brown or dull-coloured flour which contains impurities. Annual trading volume of yam flour per trader ranges, on average, from 47 to 49 bags.

Sometimes they use market stores for storage of their products, which is constructed and managed by the local government. The rental store can be used in annual base at NGN 5,000 per year.

Financial and economic status

Financial and economic status of the yam flour traders is lower than that of the fresh yam tuber traders. Their capital base ranges between NGN 50,000 to 350,000. Sometimes they make a profit within the range of NGN 10,000 to 16,000 per week. They lack fixed assets such as stores. Their only financial source is informal sources loans from relatives or friends. According to the results of the baseline survey, dealings on credit with suppliers are a relatively common way of transaction for them, compared to that for the fresh yam tuber traders.

Employed technologies and techniques

Yam flour processing starts from peeling of the yam skin using knives. After peeling the skin, the fresh yam tubers are cut into small pieces and soaked in water for at least 24 hours. The yam pieces are dried under the sun to reduce the moisture content. Drying takes more than 2 days. The dry yam pieces are brought to private millers (Figure 4-17).

As mentioned earlier, the yam flour traders do not have any modern technologies. The only technique used by the yam flour traders is feeling of the flour between the finger tips to identify the texture of the flour. The flour with finer texture is regarded as good quality flour.

Milling of dried yam

Million machine and factory

Yam flour

Source: Project Team

Figure 4-17 Yam flour production

3) Fresh yam tuber wholesalers

Enterprises and their management

Value chain analysis and baseline survey were conducted with Igala Women Yam Association in Paikoro LGA. The number of registered member in the association is 20.

The fresh yam tuber wholesalers are organised better than any other yam-related enterprises. The enterprises have been dominated by women; however, men enter into the business recently. They employ family labour for their operation. Majority of enterprises do not practise bookkeeping and do business by estimation.

Production, distribution, and consumption channels

Since they have a large financial capital base, they can keep large volume of stock at all times. The size of stock per one wholesaler ranges from 120 to 200 heaps per month. More volume of stock is stored during the period from October to February. They also have suppliers in other states such as Benue, Nasarawa and Edo in order to supplement the local supply from Paiko area. This enables them to secure their supply of raw material throughout the year.

In terms of distribution, 70% of their supplies are transported to major consuming centre such as Lagos State, Oyo State (Ibadan), and Abuja. The greater percentage of the fresh yam tubers transported out of the state goes to Lagos (40%), 20% to Oyo (Ibadan) and 10% to Abuja. The remaining supplies are sold to retailers within the state (25%) and hotels and restaurants (5%).

Prices and trading volumes

On average, the price of the fresh yam tubers ranges from NGN 35,000 to 50,000 per heap. Monthly trading volume is about 100 to 195 heaps. Some of their supplies are lost due to spoilage in store or during transport.

Financial and economic status

Proprietors of the enterprises have large capital investment in their business. The capital base of them ranges from NGN 20,000 to 45,000,000. Their assets include stocks of the fresh yam tubers, yam barns, wheel barrows, motor vehicles, and stores storage silos. Credits from both formal and informal sources are uncommon, and they do not have savings and bank deposits.

Employed technologies and techniques

No modern technologies have been adopted by the wholesalers in their trading. They store the fresh yam tubers in well ventilated structures such as barns and large concrete structures. The bans are used for storing the fresh yam tubers to be traded within a period of 1 to 3 months. The large concrete structures are used for storing their supplies for 9 to 12 months.

(5) Issues identified

1) Government services

NADP has been involved in the provision of extension services including engineering services, rural institution development, and multiplication of improved planting materials (yam seeds) to the farmers. Local governments have been the centre of rural mobilisation for most agribusinesses, and provided training for rural population to introduce technical innovations. The governments construct feeder roads for smooth operation of their activities and intervention programmes. Yam production has been promoted through those services, and increased dramatically in Niger State. However, the services to develop business management and marketing skills are limited in the state. It is necessary to improve access to business development services, especially training for financial management and marketing.

There is also the problem of double taxation against the yam related enterprises.

2) Management related issues
Record keeping, credit management, and other resources management are uncommon in the survey area. Investment in human resources development is also very low. The yam related enterprises still rely on traditional ways for doing their business except for the fresh yam tuber wholesalers. Thus, there is need for business management training to increase enterprises' productivity.

3) Technical issues
Very serious problem for yam related enterprises is spoilage of the fresh yam tubers due to bruises, yam's high moisture content, and poor storage practices. Germination of the fresh yam tubers forces the traders and wholesalers to sell them.

Export market is one of very important distribution channels. Niger State Government is promoting export of the fresh yam tubers and carried out sensitisation workshop in Minna. In order to export the fresh yam tubers, storage facilities should be modernised and kept in good conditions. Therefore, extension services should be given to them on the method of the fresh yam tubers storage and provision of modern storage facilities along with export promotion.

4) Market structure
As stated earlier, the fresh yam tubers are traded in Paiko market on yam market days (Wednesdays, Thursdays and Fridays). Large percentage of the fresh yam tubers and yam flour is transported to major consuming centre such as Lagos, Oyo and Abuja. However, linkage with the international market is still very limited. Considering efficient utilisation of the fresh yam tubers produced in the state, the international market will be an important distribution channel. Therefore, marketing planning should be supported by the government organisations.

5) Associations and cooperatives
Dadin-Kowa cooperative society has an office in Paiko market. They assist their members in an emergency or any misfortune. They store the fresh yam tubers in barns which they acquire through cooperative society, and hire security guards. They also assist each other in selling and purchasing the fresh yam tubers. In order to invest in the storage facilities and address expansion of distribution channel to the international market, the collective actions should be enhanced under the initiative of the cooperative.

6) Infrastructure
Inadequate infrastructure facilities make the business activities difficult. Access roads to rural villages are insufficient and unstable power supply hinders the operation of machinery and equipment. Lack of drainage facilities makes movement of traders and vehicles difficult in local markets. Although modern facilities for storing the fresh yam tubers are needed, the enterprises do not have enough capital to improve the facilities. Access to the microfinance is also limited for them. The cooperative society of the fresh yam tuber traders applied for the loans from a private bank; however, their application was rejected without any explanation. Therefore, access to formal financial sources should be improved.

CHAPTER 5. Results of pilot project implementation in Kano State

Project team provide business consultation services and bookkeeping training to the selected enterprises to develop their business strategies and financial management capacity. The team also supported their implementation of the strategies and day-to-day bookkeeping practices. The formats used for these BDSs are shown in Annex 5, Annex 6, and Annex 7.

5.1 Rice

5.1.1 Kura rice parboiler project

(1) Pilot project participants

Rice parboilers do not use special facilities or equipment for parboiling. Housewives of average households parboil rice for half a day (from the evening to the next morning) using several drums in their yards, and then dry it continuously in their yards or any available spaces around the villages. The average volume of rice parboiled per day is three to five bags (75 kg). The literacy rate of these women is low; therefore, only a few of them can read or write without some difficulties. Additionally, the margin derived from the commission for parboiling (commission parboiling) is quite low, which makes it difficult for them to expand their respective businesses. Because some paddy traders among the participants are thriving, a number of rice parboilers are considering expanding their businesses to become rice millers.

(2) Results of activities concerning management capacity

The rice parboilers' work is not considered 'work as a business', but 'work for a living." None of them keep records: they rely on their memory and their work experience to manage their respective businesses' finance. They do not have any grasp of essential business management concepts, such as cost management and cost-consciousness, with regard to such basic economic concepts as parboiling time, raw material costs, shipping costs, labour costs, and/or opportunity costs.

In order to improve the parboilers' current management capabilities, Project Team held bookkeeping training as a pilot project. The purpose of the training was to enable parboilers to clearly understand their business situation by visualizing their financial status with numbers and by recording their daily income and expenses in accounting books. The first key factor was to make parboilers realize that bookkeeping can improve their business, and that continuous bookkeeping is indispensable for creating future business plans and obtaining financing when expanding their businesses. Because the target participants of the workshops were rural women, a female lecturer was chosen in consideration of the trainees' social and cultural backgrounds. Since the Director of the Business Information Centre (BIC) at Kano State has a vast experience in training women from rural communities in business-related practices, such as livelihood improvement and acquiring business skills, Project Team chose her as the lecturer for the pilot project.

To compensate for the rice parboilers' low literacy abilities and inadequate calculation skills, the participants' school-age children accompanies them to the training. However, it was found that this method had a minimal effect since the participants were neither able to read nor understand accounting books even though they kept records. Additionally, the participants' children were not able to effectively explain key accounting processes to them. In order to measure the rice parboilers' performance, a key performance indicator (KPI) goal of 60% was set for their level of understanding of bookkeeping. However, in February 2011, all the pilot project participants discontinued the bookkeeping.

Meanwhile, the parboilers continue to have a strong desire to engage in paddy trading. The goal of the business is not only to profit from trading raw material paddy (as paddy traders), rather than performing the heavy physical labour of parboiling, but also to run a parboiling business in their spare time. It is difficult, however, to be a successful paddy trader without having sufficient funds and satisfactory bookkeeping skills.

(3) Results of activities concerning processing skills and the work environment

The quality of rice produced or processed in the Kura area is considered poor: therefore, its sales price at retail markets within Kano City remains low. The production technique that often receives attention as a key process with regard to rice quality is parboiling. Technical factors that play a role in degrading rice quality are unequal parboiling of paddy, raw materials, and an inappropriate drying process after parboiling. In addition to these production factors, there are problems related to quality control: Performing the parboiling and conducting the drying process in limited spaces, such as the producers' gardens and the streets in front of their houses, makes quality control difficult. Parboilers are generally commission-based processors who rarely market parboiled rice themselves, which makes it difficult to incentivize them regarding product quality. Additionally, parboilers' clients, including paddy traders, sometimes deliberately sell rice with high water content, which adversely affects the quality of the rice. When rice prices are low, it is difficult to invest in equipment to improve rice quality and work efficiency; the resultant confined work sites thus cause a disadvantage when it comes to improving the parboilers'work environment.

In the pilot project, with the aim of reducing costs and improving fuel efficiency, re-examination of parboiling and drying processes was supported. However, the fuel efficiency improvements for one to five bags of one-time parboiling are about NGN 20–40 per bag; therefore, the savings per parboiling amount is NGN 20–200. Therefore, with this small savings, it is difficult to motivate participants who have just started preparing accounting records. Moreover, the parboilers' main focus is to supplement their parboiling operations with the paddy-trading business; therefore, it is difficult for them to take a forward-looking stance toward improving their skills as parboilers.

(4) Result of activities concerning price and marketing

The average cost for parboiling services is approximately 250 naira per rice bag (75-85 kg). Some traders' offers are as little as 150 naira for parboiling services; thus, the incentive for improving quality is minimal. The result is that stakeholders in the rice value chain are not sufficiently motivated to care about improvement in the quality of their rice. In addition, in order to enhance brand image and rice quality in Kura, activities to develop the entire value chain system, including rice millers and traders, are required. Therefore, some type of linkage between the pilot project for rice millers and the project for rice traders becomes essential. A business development service provider (BDSP) is required, in order to integrate every stakeholder function in the rice value chain and achieve KMCICT's goals and objectives.

(5) Accounting book analysis

Among the six participating families in the project, one family had an educated daughter, who as a volunteer, recorded all six families' accounting books from week one through week twelve after which the young woman got married and moved to another location. Alternative personnel, or another method of recording the books, were not considered – an indicator of the group's minimal participation and/or interest. Below is a list of the group's trends according to the first twelve weeks' (three terms') accounting data. One family's statistics were eliminated due to default; thus, the below analysis comprises five families' records.

- Sales price for one unit was NGN 140, without variance, among all the participating enterprises during the entire pilot project period.
- Owning to the parboilers' commission-based production, they were not able to purchase raw material nor were they able to keep them in stock. Therefore, their sales value was equal to their gross operating profit.
- Expense items for all the participating enterprises are water, firewood, and kerosene.
- The ratio of expenses to gross operating profit varies significantly according to sales value. The larger the sales value, the lower this ratio and the higher the cost-effectiveness. This means that expenses can be considered as a fixed cost.
- From the perspective of cost-effectiveness of production represented by the ratio of expenses to gross operating profit the enterprises can be classified into the following categories: high cost-effective enterprise and low cost-effective enterprise. Two out of the five enterprises are considered high cost-effective enterprises, showing a ratio of 20% to 45% and sales in the range of NGN 31,000-39,000 per term. The rest of the three enterprises are considered in the low cost-effective category, with a ratio of 55% to 70% and sales in the range of NGN 16,000-19,000 per term. This comparison indicates that the enterprises with a high sales value operate their respective businesses cost-effectively and with high net operating profits.

The above accounting book analyses indicate that the parboilers' financial goal must be to improve cost-effectiveness by increasing sales value. However, although accounting is a base of business development, the participating parboilers' low incentive to continue their bookkeeping activities indicates low effectiveness of the BDS that have been provided to them.

(6) Achievement of indicators

Project Team developed business strategies based on a business consultation strategy. Critical Success Factors (CSFs), Key Goal Indicators (KGIs), and Key Performance Indicators (KPIs) defined in the strategies are described in Table 5-1. Table 5-2 shows the monitoring items for KGI and KPI.

For CSF 1 Improvements in financial-management skills through bookkeeping practices and access to financing, KPI is the percentage of self-bookkeeping practices. Owning to the parboilers’ low literacy rate, Project Team appointed a volunteer through its consultation with the parboilers, to assist them in their daily bookkeeping practices. The volunteer was active for the first three weeks, but was unable to provide continued support, owning to personal reasons. After the departure of the volunteer, parboilers did not seek another volunteer to support their bookkeeping practices, thus indicating their lower commitment levels. As a result, bookkeeping transactions were recorded for only three weeks. The ultimate result: CSF was not achieved.

For CSF 2 Development of money-saving skills to achieve and sustain trading business, KGI is 30 percent of savings from monthly income. The parboilers’ common business practices were based on a commission type of income; however, they were eager to become traders, who buy paddy, parboil, and sell it. In order to become traders, parboilers needed to secure sufficient savings for expanded business capacity. Project Team set its key goal and key performance indicators at 30% of monthly income to be saved by the parboilers in their respective bank accounts. Project Team monitored the parboilers’ bookkeeping records and gave proper guidance regarding saving amounts, based on the parboilers' business transactions. However, as mentioned above, bookkeeping practices were not continued after the departure of the volunteer, which significantly decreased the parboilers’ commitments to the project.

Table 5-1 Business strategies of parboilers

No.	CSF	KGI	KPI
1	Improvements in financial-management skills through bookkeeping practices and access to financing	• Continuous bookkeeping practices: 100%	• Self-bookkeeping practices: 60%
2	Development of money-saving skills to achieve and sustain trading businesses	• Save 30% of monthly income	• Save at least 30% of monthly income in bank account

Source: Project Team

Table 5-2 Monitoring items

Indicators	Monitoring items
CSF 1: Improvements in financial-management skills through bookkeeping practices and access to financing	
KGI 1: Continuous bookkeeping practices 100%	• Bookkeeping situation of each business
KPI 1: Self-bookkeeping practices 60%	• Bookkeeping situation of each business
CSF 2: Development of money-saving skills to achieve and sustain trading business	
KGI 2: Save 30% of monthly income	• Monthly income shown in the accounting book and the balance in bank account
KPI 2: Save at least 30% of monthly income in bank account	• Monthly income shown in the accounting book and the balance in bank account

Source: Project Team

The reasons for failure to achieve CFS are: (1) low parboilers' literacy, preventing them from maintaining the incentive to continue their bookkeeping activities; and more importantly, (2) a willingness to invest their own resources, including time and effort, to maintain bookkeeping for the development of their businesses. Setbacks that emerged from the parboilers' attitudes resulted from different approaches taken by Project Team from other donor-supported projects. The business strategy designed for the parboilers in this project focused on basic business management skills, such as bookkeeping. On the other hand, other projects had focused on immediate improvements in financial management through cash provisions. Project Team explained the approach to the parboilers; however, the parboilers did not support the approach, nor did their attitudes change during the pilot project period. This led to low commitment on their parts and a discontinuation of their bookkeeping practices.

(7) Lessons learnt and future roles of BDS

Parboiling has traditionally been conducted mainly by women, which may partially explain why their income is low. Because of low profitability in the parboiling activity, coupled with low incentives by the parboilers to develop their individual businesses, it is difficult for them to produce quality rice as an independent parboiling business. In order to improve profitability and cost-effectiveness vertical integration of business types such as the unification of farming and parboiling, parboiling and rice trading, and parboiling and rice milling is necessary. There is an opportunity to increase profitability of the parboiling activity through the introduction of cost-effective production processes and techniques to improve the quality of parboiled rice.

On the other hand, the low quality of paddy (rice before threshing, or in the husk) is also an issue. Straw, husks, and other foreign impurities are mixed in the rice before it is threshed, resulting in

lowering the purity level of the rice. Milling of such impure paddy substantially reduces the efficiency of the milling machinery. Although this project did not deal with problems related to agricultural production, it is recommended that BDSPs, which are able to provide comprehensive BDS, including services regarding agricultural production, be strengthened. The Agricultural Development Programme (ADP) and Kano Agricultural Research Development Authority (KNARDA) must make a concerted effort in cooperation with the State Ministry of Commerce and Industry to deal with the issues of the quality of paddy. To increase value-added elements in the rice value chain, all of the parties in the chain must work together to improve efficiency of the rice market; therefore, BDS provisions to support this initiative are essential. Active involvement of concerned associations and cooperatives in BDS provision contributes to an increase in effectiveness of the provisions; thus capacity of the associations and cooperatives need to be enhanced.

Excess provisions of subsidies and free services to participating enterprises will most likely hinder development of their entrepreneurship by fostering dependency. It is important to promote, for example, bookkeeping as a means to increase the participants' own investments for the expansion of their respective businesses. In addition, other measures to promote self-help should be considered and implemented. For example, a small loan will be provided instead of providing free subsidies, and collaboration with NGOs such as the Women and Youth Support (WAYS) and Women Farmers Advancement Network (WOFAN), which have sufficient experience in understanding and working with women, for the delivery of BDSs will enhance the women entrepreneurs' self-help spirit.

5.1.2 Kura rice miller project

(1) Pilot project participants

Participants in the Kura rice miller project are all males. Enterprises employ an average of two workers. Since Kura is a major rice-processing centre in the state, these enterprises conduct business with traders based in Kura, as well as other states and other parts of Kano State.

Because most rice millers use milling machines to husk and mill paddy, husk and bran are not separated in the process. Although rice husks can be sold as fuel at a high price, rice millers do not take advantage of these business opportunities. Due to an unstable power supply and the high cost of fuel for generators commission milling is not profitable; therefore BDS were provided by the project to enhance commercial milling rather than commission milling. The proposed measures regarding mechanisation and introduction of improved procedures are presented in Annex 8.

Participating rice millers intend to enhance production and quality by introducing new machines, and there were rice millers who are considering expanding their business by obtaining parboiling know-how.

(2) Results of activities concerning management capacity

There are no enterprises in this project that perform bookkeeping, and their fund-raising capabilities are very low. Although they do wish to acquire new rice-milling machines for quality improvement, they do not have sufficient funds to purchase the said machines; therefore they continue to operate old, poorly maintained milling machines to sustain their businesses. During the pilot project, Project Team taught bookkeeping and advised the participants on how to prepare business plans to focus the group on its respective goals and give a backup measure in assisting them to fulfil their objectives.

(3) Results of activities concerning processing skills and the work environment

Project Team conducted a study tour in Jigawa State, as well as other locations, in order to help the rice millers understand how to improve work efficiency and select the appropriate machines for

producing high-quality rice. The rice millers should assume a leading role by initiating a solid structure of the rice value chain to improve rice quality. This is an ideal situation for the rice millers to lead or integrate other stakeholders, parboilers, and paddy/milled rice traders, and set conditions and parameters to initiate such a system.

(4) Result of activities concerning price and marketing

Since Kura is the main rice-processing centre in Kano State, traders from not only within the state, but also from other states, come to Kura to purchase rice. A significant pricing problem is that Kura rice is sold at lower prices than rice produced in other regions, such as the large markets in the Sabon Gari. There are several reasons why Kura rice is sold at low prices; the main reason is its quality. Tudun Wada and Garko rice are other major rice trading centres in Kano State and are both considered high-quality rice. The difference between these two kinds of rice and Kura rice is discernible to the eye, since the sizes of these regions' rice grains are more consistent. Kura rice's trading volume is large; however, it is classified as a low-priced product, due to its quality; therefore its sales do not result in increased profits.

It will be necessary for rice milers to explore new retailers (sales destinations) by themselves, looking toward proactively seeking buyers, as opposed to waiting for the buyers to locate them. The reason rice retailers in the Yankaba were chosen is that, compared with the Sabon Gari market, the rice millers decided there were more middle-class consumers and that purchasing power for quality goods is higher in the Yankaba. As a part of their ongoing process, it would also be beneficial for them to explore other retailers in the Yankaba market; then they should explore the Rimi market, although there were more low-income consumers in the Rimi market. If rice millers are always able to sell a low, but consistent quality of rice, it will be possible for them to develop the low-end market.

(5) Accounting book analysis

All the four participants in the pilot project kept records from the week one through the last week, with a total of 32weeks (eight terms). Since their business size is at a micro level, the enterprise owner directly participated in keeping their own individual accounting records. Below is the list of the features among the aforementioned group.

- Sales price changes according to the buyers and the terms and conditions of the sales, and they remain stable within the 10% to 15% range.
- Purchase price varies according to the suppliers and the terms and conditions of the sales, and they remain stable within the 10% to 15% range.
- The ratio of gross operating profit to sales is stable through the terms and conditions of the sales and is between 8%－11%, although varying among the owners between 6%－12%.
- Their expenses consisted of parboiling cost, labour, diesel fuel, spare parts etc.
- The ratio of expenses to sales is between 5% －7% and is stable through the terms and conditions of the sales, as well as among the owners. An extrapolation of this data indicates that expenses behave similarly to variable costs.
- Except one large enterprise, the ratio of net profit to sales of the three small enterprises is low, and the amount is small. Their average net profit per term ranges from NGN 5,000 to NGN 15,000, which is about 1% to 4% of their sales. Per-term net profit of the enterprise with a large sales ranges from NGN 50,000 to NGN 150,000, which is about 6% to 7% of its sales.

The above accounting book analyses indicate that the financial goal of the rice millers should be improving gross margin (ratio of gross operating profit to sales) by selecting better buyers and suppliers.

(6) Achievement of indicators

Project Team developed business strategies based on the business consultation. Critical Success Factors (CSFs), Key Goal Indicators (KGIs), and Key Performance Indicators (KPIs) are described in Table 5-3. Table 5-4 shows the monitoring items for KGI and KPI.

Table 5-3 Business strategies of millers

No.	CSF	KGI	KPI
1	Increased production through application of new machines	• 30% increase in sales volume	• 60% usage of new machines
2	Improvements in quality of milled rice through application of new machines	• 10% increase in sales price	• 60% usage of new machines
3	Improvements in financial-management skills through bookkeeping practices	• 100% continuous bookkeeping practices	• 60% of self-bookkeeping practices

Source: Project Team

Table 5-4 Monitoring items

Indicators	Monitoring items
CSF 1: Increased production through application of new machines	
KGI 1: 30% increase in sales volume KPI 1: 60% usage of new machines	• Amount of rice milled by individual enterprise • Ratio of rice milled with new machines to total milled rice at each enterprise
CSF 2: Improvements in quality of milled rice through application of new machines	
KGI 2: 10% increase in sales price KPI 2: 60% usage of new machines	• Unit sale price of rice • Ratio of rice milled with new machines to total milled rice at each enterprise
CSF 3: Improvements in financial-management skills through bookkeeping practices	
KGI 3: 100% continuous bookkeeping practices	• Bookkeeping situation of each enterprise
KPI 3: 60% of self-bookkeeping practices	• Bookkeeping situation of each enterprise

Source: Project Team

For both CSF 1 and CSF2, KPI is defined as the usage of new machines. To purchase machines, millers submitted an application form to the Nigeria Economic Reconstruction Fund (NERF) through SMEDAN; however, no actions to facilitate the process were taken at SMEDAN for three months. As a next option, millers applied for a Bank of Industry (BOI) loan scheme in June 2011. Millers developed a business action plan in consultation with Project Team and submitted it, together with the application form. Millers visited the BOI office in Kaduna State to conduct an interview with bank officers. As of August 2011, loan disbursement had not been facilitated. Millers were unable to purchase new machines; therefore, CSF1 and 2 were not achieved during the pilot project.

Prompt and concrete actions were essential for gaining access to loans; however, the businesses were not able to obtain loans from the banks during the pilot project period. From this deficient loan-application activity, there emerged a necessity to improve the competency of SMEDAN staff as a business development service provider who is able to analyse and diagnose business operations based on bookkeeping records to assist in the development of business plans and conduct follow-up activities once enterprises obtain their respective loans from the banks.

For CSF 3 (Improvements in financial-management skills through bookkeeping practices), KGI is defined as 100% continuous bookkeeping practices. All the four participants continued their bookkeeping practices, whereas 80% continued through self-bookkeeping; therefore, CSF3 was achieved during the pilot project. Bookkeeping practices have helped millers to understand unnecessary expenses. Millers minimized these costs, which increased their profits through efforts to utilize financial information from bookkeeping records.

(7) Lessons learnt and future roles of BDS

Technically, competent BDSP regarding rice processing should provide BDS to millers for the improvement of rice quality. It may be necessary to provide individual programs on agriculture-related primary and secondary processing businesses.

There are no systematic quality standards that are applied to rice trading. Traditional methods (measuring rice moisture content by inserting a hand into the rice grain) are still practiced. The Standards Organization of Nigeria (SON) defines the rice standards; however it has not stipulated quality in a concrete manner. Unrealistic standards only serve as tools for buyers to compel sellers to lower the price of their rice. Therefore, in order to achieve fair rice training, the development of specific and sound rice standards should be implemented.

Some financial institutions can serve as sources of funding, but the lending procedures take too long. There are also private micro-finance banks, where the pre-qualifying time is shortened, but they tend to finance higher-risk borrowing activities with higher interest rates. For example, an annual interest rate of 25% is not unusual for these organizations. As for low-interest funding, most of this financing is provided by government-related financial organizations. Their procedures and pre-qualifying periods take an inordinate amount of time. In such a situation, even if funds are successfully obtained, the business situation has completely changed by the time the funding is distributed. It is impossible to manage the schedule for business development if it takes a half a year to register a company or cooperative, and then another half a year for financing. BDSPs are required to facilitate and coordinate business assessment processes, develop business plans, and submit loan applications prior to loan appraisals by banking institutions.

5.1.3 Kura rice trader project

(1) Pilot project participants

The participants in the Kura rice trader project were all male. A characteristic of traders in Kura is that they do not own vehicles, nor do they possess their own storage facilities. Most traders use public transportation, such as a bus and/or a taxi to conduct business, and they conduct trading which does not require stock. According to the business owners, the maintenance costs of vehicles are too high; thus they cannot transport rice in a timely manner, resulting in the cost of transportation being a significant bottleneck to improving the traders' profit margins. The enterprises have an average of two workers and the major sales destination spot is the Sabon Gari market in Kano City. Although traders themselves have a strong desire to improve their business condition, obtaining funds is difficult, as they lack knowledge of accounting books and do not keep records of their transactions.

Kura, where the participants live, is an advantageous place for business, as it is close to the centre of Kano City (about 40 minutes away), the consumption destination. The rice production volume in Kura is sizable; however, the sales volume exceeds production. Thus in the months of January and February, which is the off-season, the raw material paddy becomes scarce, requiring the procurement of raw material paddy from other areas. Near Kura, there is a place called the Tudun Wada LGA, which is also a major rice production site. Due to its high quality, Tudun Wada rice is a competitor of Kura rice.

There is some imported rice from Thailand and the United States and consumers (especially the wealthy class) prefer high-quality, imported rice with its improved branding and packaging.

The pilot project for the traders in Kura comprises accounting training only between October and November 2010. There are no applicants for improvement of production techniques and marketing; therefore, no indicators or monitoring methods have been set up. Lessons learnt from the pilot project implementation with this business type are limited. BDSPs should provide facilitation services to enhance collaboration among rice traders, millers, and par boilers for the improvement of rice quality and market efficiency.

5.1.4 Fagge rice trader project

(1) Pilot project participants

The Sabon Gari market in Fagge LGA is located in the centre of Kano City, and sells a variety of products ranging from foodstuffs, such as rice, to daily necessities. Traders in Sabon Gari purchase rice from traders in Kura, which accounts for more than half of the market share. Demand for rice is on the rise, including among the younger generation; therefore, the consumption volume of rice is expected to increase. However, the infrastructure of the areas surrounding the market is not well developed, making access to the market difficult, which in turn makes it difficult to improve trading efficiency. Like the traders in Kura, few enterprises maintain accounting books, which can be used to help better understand business situations. Therefore, Project Team explained that keeping an accounting book is a basic management tool; and business expansion is impossible without it. By the time the pilot project was finalized in 2011, there had been no requests for additional bookkeeping training, nor specific consultation regarding funding. Additionally, monitoring activities, for example, KPI/ KGI, were not established.

Wholesalers and retailers in Kano City have a strong influence over rice-related businesses in Kura and other surrounding areas. Thus, it is recommended that the Kano Ministry of Commerce, Industry, Cooperatives and Tourism as well as the related state departments should regularly monitor their operations in order to facilitate enhancement of business relations with Kura. Such inter-cluster BDS provisions are important to achieve value-chain-wide quality improvement and increase in value-added standards that will result in increased competition.

5.2 Leather

5.2.1 Kano traditional tannery project

(1) Pilot project participants

The target of the Kano traditional tannery pilot project is the Association of Traditional Tannery, which manages all tanning facilities. Since the members of this association are never removed once they are registered, and since the businesses have been passed down for generations in this area, the number of registered members at the moment (whether it is 100 or 300) remains unclear.

(2) Results of activities concerning management capacity

There is a charge for the usage of tanning facilities. Two naira should be paid for every piece of ox, goat, or snake skin, as rent for the use of the tanning facilities. This usage fee is used for the management and maintenance of the tannery. However, when financial records were checked, it was revealed that although 30 to 50 businesses on the average use, such facilities, each time the team visited the project sites, only 10, at the most, paid a usage charge, meaning that the gap between the

rule and reality was very wide. This is partially because the association's accountant did not keep books every time the businesses used the facilities. It was revealed that tanning worksites are owned by 13 landowners who never pay rent when they carry out tanning operations on the premises of these land areas. Between February and May 2011, there were periods where no records of usage were found; it was explained that this is because the provision of leather material was scarce, thus their income dropped. In addition, as the price of water for tanning is rising, they sometimes do not pay the usage fee in order to save costs.

It was observed that membership in the association as well as membership fee collection, were not well managed, and financial accounts were not adequately maintained. Therefore, the pilot project provided guidance on accounting, organizational capability building, and enhancement of sanitary control of the tanning facilities. Regarding the capacity building of the tannery cooperative, the team particularly provided BDS to enhance the cooperative's sanitary management arrangement. The team did not expand its support to the management of relationships between landowners and the association, nor to sanitary management involving the surrounding community.

(3) Results of activities concerning processing skills and the work environment

Soon after the coordinated cleaning of the tanning facilities in December 2010, Project Team held a '5S' workshop for tanning businesses in which Project Team explained the importance of activities pertaining to '5S' which stands for the five Japanese words meaning: 'sorting out,' 'order,' 'cleaning,' 'cleanliness,' and 'good manners.' The team provided specific advice, such as 'do not keep unnecessary things in the tanning worksites,' 'do not throw garbage away,' 'do not leave the raw materials on the ground,' and 'keep the cleaning equipment in a fixed place' (for 5S checklist see Annex 9).

Starting with this cleaning activity, people came to realise the importance of sanitary management activities, including those conducted at tanning worksites and their surrounding areas. A stakeholder council was then created, with participation by the tannery association and administrative organizations, including the Kano State Ministry of Environment, Kano Municipal, Sustainable Kano Project (which comes under the Ministry of Environment), and Kano State Ministry of Commerce and Industry. In April 2011, the incumbent governor, who places a great deal of importance on the maintenance—and improvement—of the environment, won the general election, which helped with the allocation of funds to the government organization that undertook the cleaning in Kano Municipal as well as promoting participation in the council itself. Subsequently at the council, role allotment to each organization was documented, and cleaning activities have been performed on a continual basis. Initial activity was started by Project Team; however, after the third meeting of the stakeholder council, after repeated clean-up activities, and once the Pilot Project was completed, the leading role was mandated to the Kano State Ministry of Environment.

(4) Results of activities concerning pricing and marketing

In the past, British importers used to buy skins directly from tanning worksites. Today, a single local buyer has a monopoly on all trading at the tanning worksites, leading to low trading prices and delayed payments. The end result has been that the exporting business through this local buyer has virtually ceased. When Project Team asked the buyer to avoid delaying payments, the buyer began to pay on time, and exports commenced once again. In order for the tannery association to explore the possibilities of trades with other export-oriented buyers, the Kano office of the Nigeria Export Promotion Council (NEPC) visited the tannery association, providing it with BDSP assistance, such as business matching.

(5) Accounting book analysis

An accounting seminar targeting individual tannery enterprises and the tannery association was held, wherein the association's data was used for the analysis. Therefore, only the data of the association, which is counted as one enterprise, was analysed. The data was recorded from term one through term three; however, only data from the seventh term was recorded. Below is a synopsis of the record.

- The record showed that the sales and purchases were zero; therefore, stock was recorded as zero in amount.
- As the record of the fees collected, the names of the members who paid for using the tannery area were recorded. However, during each four-week-period, only five to ten names were recorded, and the amount recorded was between NGN 2,000 and NGN 4,000. Although between 100 and 300 members registered as members of the association, the actual number of users is in the range of 30 to 50 people. This means that only 10% to 30% of the members have been recorded and paid the membership fee.
- According to the record, cash out was recorded at zero; thus, the cost was zero. Since the association is mandated to maintain and manage the tannery, there should be some amount indicated for expenses. No explanation on the zero record was found.

Owning to limited information recorded in the accounting book, Project Team was unable to analyse the financial characteristics of a traditional tannery operation.

(6) Achievement of indicators

Project Team developed business strategies based on the business consultation. Critical Success Factors (CSFs), Key Goal Indicators (KGIs), and Key Performance Indicators (KPIs) are described in Table 5-5. Table 5-6 shows the monitoring items for KGI and KPI.

For CSF 1 (Improvements in waste-management skills of the association), KGI is maintenance of cleanliness in the tanning environment, whereas KPI is the evaluation of 5S activities based on the checklist developed by Project Team. The maintenance level of the tanning environment was measured against the defined 100% level of the tanning environment after clean-up in December 2010. Since the tannery association did not have working tools, Project Team asked Kano Municipal after the December 2010 clean-up activities to provide working tools such as wheelbarrows, to allow the association to maintain cleanliness of the tanning pit environment. However, the tannery association did not routinely clean up; thus, the environment became worse soon after the clean-up activities. Project Team advised how to maintain cleanliness, based on the application of the 5S procedures, but the chairman of the association did not provide leadership in this matter. Consequently, the average score of 5S was only seven out of a total of twenty. Justified by this poor result, CFS 1 was not achieved, since 70% of cleanliness could not be determined with this level of 5S practices.

For the stakeholders' meeting, which was held before completion of the Pilot Project, stakeholder participants included the Kano Ministry of Commerce and Industry, the Ministry of Environment, tannery association, Project Team and other organizations. During this meeting, the tasks of each stakeholder were discussed and confirmed. For example, the Ministry of Environment is going to have full responsibility in overseeing the tanning environment, whereas Kano Municipal will appoint a health officer to monitor the tanning environment on a weekly basis and also allocate clean-up working tools to the tannery association.

Table 5-5 Business strategies of traditional tannery

No.	CSF	KGI	KPI
1	Improvements in waste-management skills of the association	• 70% maintenance of cleanliness in the tanning environment	• Evaluation of 5S activities based on the checklist
2	Improvements in financial-management skills of the association	• 100% continuous bookkeeping practices	• 60% self-bookkeeping practices by the association
3	Improvements in accessibility to leather export traders/agents by the association	• One official contract with export traders/agents (NGN500,000)	• Number of monthly contacts made by the association with export traders/agents

Source: Project Team

Table 5-6 Monitoring items

Indicators	Monitoring items
CSF 1: Improvements in waste-management skills of the association	
KGI 1: 70% maintenance of cleanliness in the tanning environment	• Environment in the tanning facilities
KPI 1: Evaluation of 5S activities based on the checklist	• 5S scores based on the checklist
CSF 2: Improvements in financial-management skills of the association	
KGI 2: 100% continuous bookkeeping practices	• Bookkeeping status at the association
KPI 2: 60% self-bookkeeping practices by the association	• Bookkeeping status at the association
CSF 3: Improvements in accessibility to leather export traders/agents by the association	
KGI 3: One official contract with export traders/agents (NGN 500,000)	• Contract details
KPI 3: Number of monthly contacts made by the association with export traders/agents	• Number of monthly contacts

Source: Project Team

For CFS 2 (Improvements in financial-management skills of the association), KGI represents continuous bookkeeping practices, whereas KPI donates self-bookkeeping practices by the association. During the monitoring of the bookkeeping records, Project Team had to confirm their figures/information with the chairman of the association several times. One notable contradiction was found, for example, wherein numerous users of the tannery still led to no generated income for several months in the bookkeeping records. No concrete explanation was made by the chairman regarding this contradiction; thus, the quality of management of the tannery association had become questionable. Bookkeeping was not routinely practiced, which resulted in KPI as low as 10%. Project Team carefully evaluated this management situation and suggested that the Kano State Ministry of Commerce, Industry, Cooperatives, and Tourism oversee and give proper guidance to the association to improve financial management areas.

For CSF 3 (Improvements in accessibility to leather export traders/agents by the association), KGI signified the official contract made with leather export traders/agents, whereas KPI was set as the number of monthly contacts made with export traders/agents. During the pilot project period, no contract was made with leather export traders/agents; therefore, KGI was not achieved. On the other hand, Project Team visited the leather exporter, who has maintained business relationships with the

tannery association, to request restart of business activities. Business activities had been stopped when the two parties could not reach an agreement on the payment terms: the leather exporter wanted repayment within six months of the business transaction, whereas the tannery association wanted payment after only a few weeks of the business transaction. Since the tannery association now requested a one-and-one-half month period of payment schedule after the business transaction, Project Team negotiated with the leather exporter on their behalf. Since the leather exporter then agreed with the new payment conditions, business activities were restarted anew. This successful approach is a good example of our Project Team acting as a BDSP to intervene in the identified problems within the particular value chain. A BDSP, represented as SMEDAN, should facilitate and act as a catalyst to solve various problems. In order to act as a catalyst, SMEDAN should enhance its organizational capacity in terms of staff personnel, as well as its quality of service provisions by understanding the needs of the business environment.

(7) Lessons learnt and future roles of BDS

1) '5S' instruction for sanitary management and collaboration with administrative authorities

The purpose of instructing the Association of Traditional Tannery in sanitary management based on '5S' was to make the tanning worksites hygienic enough to attract the buyers who visit the sites. On implementing '5S', it was decided to conduct a coordinated cleaning of the tanning worksites, because over the past 80 years (since the beginning of the tannery), a large amount of garbage, animal flesh, and hair had accumulated at the site.

There are five administrative authorities involved in promoting sanitation at the tanning worksites, and each of them played an important role in completing the cleaning task. The BDS had the most important function in coordinating and supervising the individual institutions in their ability to complete their tasks. The pilot project played a coordinating role, and the Ministry of Environment is l taking over the handling of the entire process. This can be a reference case to see how coordination can be done by BDSPs.

2) Access to leather exports

Tanning businesses wish to expand their exporting business, but a single buyer continues to hold a monopoly over exports; thus, a solution to this monopolized situation has not been found. When visiting the NEPC, the tanning businesses received some useful advice from the NEPC regarding how to find buyers and how to market products to the public. As the NEPC is expected to provide specific and realistic consultation services for small and medium enterprises when they aim to expand internationally, it is better to further strengthen the function of the NEPC. The following roles are envisaged:

- Collecting information on foreign regulations/requirements and providing information via the internet for small and medium enterprises;
- Providing business matching between product suppliers and buyers;
- Visiting local small and medium enterprises to provide export promotion consulting services; and
- Cooperating with the NEPC's other zone offices and export promotion organizations (such as JETRO)

5.2.2 Kano leather products manufacturer project

(1) Pilot project participants

Among the leather producers in Kofar Wambai, Kano Municipal, five businesses took part in the Kano leather products manufacturers pilot project, and all the participants were involved in the assembly business. Kofar Wambai is a district with many leather-producing worksites and associated

subcontractors, and near this district, there are tanning worksites where leather material is processed. The Kofar Wambai market and the Sabon Gari market, which deal in leather products, are also located nearby. Therefore, it can be said that this district is conveniently located for the leather producers, with perfect distribution channels—from material procurement to the sale of products.

Product assembly businesses outsource the processing of each part of the leather products made to sub-contractors and are engaged in the final assembly of products. Regarding the manufacturing style, at present, most adopt a made-to-order system; whereby, producers receive orders from customers and then start producing; therefore, they rarely produce products first and go to the market to sell them via intermediary agents.

For example, a typical manufacturing process of leather shoes consists of the following activities: cutting leather material (cutting out parts using pattern paper), sewing (sewing the upper leather and liner material), attaching the inner bottom (attaching the inner bottom to a wooden mould), inserting subordinate materials (inserting a heel core and other materials that reinforce hardness), and attaching the bottom (attaching the shoe sole to the upper leather). Product assembly businesses procure, such parts as upper leather, shoe soles, and heels, from subcontractors.

There are five participants, but their major products are not the same: two mainly produce ox and goat skin sandals; two produce ox and goat skin shoes; and one produces bags, belts, wallets, and shoes.

(2) Results of activities concerning management capacity

As participants in Pilot Project produce various kinds of products, such as shoes, sandals, and bags, using different types of leather (e.g. ox, goat, snake, and/or crocodile skin), training for financial bookkeeping was conducted three times, so that the participants were able to meticulously control their businesses by each product. The participants now keep financial records by themselves, although they are advised by Project Team and lecturers in charge of financial accounting.

Through interviews conducted locally with the targeted businesses, it was found that after the businesses commenced their record-keeping activities, their recognition－and appreciation－ of costs deepened. Product assembly businesses receive orders from customers after negotiating with them and deciding sale prices; however, thus far, they have not recorded or analysed their production costs in detail. It can thus be said that clarifying breakdowns and ratios of production costs is a positive outcome of the record-keeping system introduced by Pilot Project, which was planned so as to clearly show the material cost of products and the products' selling prices. In addition, record-keeping by product clarified selling/procurement records, thus enabling producers to examine their marketing strategies according to the product mix. At the beginning and during the middle of the training, the project's participants and Project Team went through training sessions that taught the elements of bookkeeping by product. However, this did not result in a marketing strategy that made use of the tallied results. Probable reasons for this are as follows:

- In order to examine the product mix, the 'inventory method' was adopted when compiling stock change charts; however, because businesses do not carry inventory every four weeks, it was not possible for them to keep records using these charts.
- Since the Microsoft Office Excel spread sheet for tallying is complicated, it was difficult to keep records according to types of materials.
- Although businesses did grasp the approximate ratios of materials and products, they were not able to input figures, since each time materials are received, they are of different sizes.

(3) Results of activities concerning processing skills and the work environment

In response to the requests by leather product producers, workshops on technology and marketing were held in June 2011, along with additional training sessions dealing with financial accounting. The workshops, which compared small and medium leather processors to their Japanese counterparts, were aimed at helping participants become aware of the areas that they expected would be most feasible in Nigeria for improving processing skills. However, the producers lacked the concept of design and simply made products that imitate the appearance of other producers' products; thus, it was necessary for them to understand the linkages among marketing, design, and processing accuracy. In order to enhance efficiency of the training, follow-up at their worksites is needed.

(4) Results of activities concerning pricing and marketing

The marketing strategies based on a product mix have not been achieved; however, the participants in the pilot project were highly motivated. Getting advice from the Nigerian Export Pro-motion Council (NEPC), they examined the possibility of taking part in trade fairs held in neighbouring countries, and drafted leaflets introducing the association's products; as such material was needed for the exhibitions. The person in charge at the NEPC was knowledgeable about leather and positive about supporting small and medium businesses.

(5) Accounting book analysis

All five participants kept their individual records for all thirty-two weeks that is from the first period through the eighth period. Since the size of their respective enterprises was defined at the micro level, the owners themselves were directly involved in the record keeping. Among the five participants, four produced one product by mixing two materials, and one participant produced three products out of three kinds of material. Therefore, the participants were expecting to realise a substantial gross margin ratio by the material they provided, and they were willing to find out the best product mixture. The project customized the format of the accounting book specifically to accommodate the group; however, the amount of usage by each product and each material was not recorded, and, as a consequence, the gross margin ratio could not be calculated. However, each member's record indicated the purchase price by material; therefore, the gross operating profit by material could be estimated, which did provide valuable data for the enterprise owner. The following are the main aspects of the group's program:

- During the four-week period, there were times when there were no sales and/or no purchases for all participants. This means the business cycle for individual enterprise is expected to be longer than four weeks; thus, this analysis will incorporate the entire eight weeks of data.
- The unit price for items such as sandals, shoes, bags, and belts varies by product from NGN 500 to NGN 1,100 per unit. The sales price of the same product is about the same, and the price difference for material is fairly small, which is in the range of 10% to 30% per sales unit.
- The purchase price for material varies depending on the kind of skin, such as cow, goat, crocodile, and/or snake. It is necessary to develop a table to show the amounts of various raw materials necessary to produce one unit of product. The customized accounting book employed the basic unit of material needed for a product, but the participants did not keep records, since material size varies by purchase, and the basic unit may change accordingly. Therefore, only the average gross operating profit can be obtained from the accounting book data.
- The average ratio of gross operating profit to sales among the five participants during the total eight periods varied from 36% to 63%, which difference is considered to be sizable.
- Expenditures include the following three categories: salary, sewing, and parts (sole, heel, and cushion). The enterprise with higher gross operating profit ratio shows a higher rate of expenses ratio; however the expenses ratio remains between 15% and 24%, and the variation is smaller than those of the gross operating profit ratio.

- Net operating profit is between NGN 12,000 and NGN 24,000 per one period, and the ratio for sales was from 22% to 40%. The records indicate that the participant with higher sales had a higher ratio of net operating profit to sales.

An analysis of the accounting records indicated that if changing the product is not possible for increasing profits, enhancing the gross operating profit ratio can be a financial management goal. This can be achieved by improving product mix. In order to do so, as indicated in the original project plan, financial record keeping by product, material, and basic unit price is mandatory.

(6) Achievement of indicators

Project Team developed business strategies based on the business consultation. Critical Success Factors (CSFs), Key Goal Indicators (KGIs), and Key Performance Indicators (KPIs) are described in Table 5-7, and Table 5-8 shows the monitoring items for KGI and KPI.

For CSF 1 (Improvements in financial-management skills), KGI represents continuous bookkeeping practices. Leather manufacturers produce sandals, shoes, and bags with different types of leather materials. Therefore, the bookkeeping structure was designed to allow gross margin to be identified for leather products. Based on monitoring results, 44% of the participants maintained their bookkeeping practices. One participant had not practiced for fourteen weeks, whereas the other four participants continued their bookkeeping practices throughout the entire pilot project period. The result from the one participant negatively affected the total percentage; however, by evaluating the second half of the monitoring period, it is reasonable to say that CSF 1 was achieved.

Table 5-7 Business strategies of leather manufacturers

No.	CSF	KGI	KPI
1	Improvements in financial-management skills	100% continuous bookkeeping practices	60% self-bookkeeping practices
2	Improvements in product mix for enhanced marketing skills	20% average increase in gross margin	Increase in gross-margin percentage

Source: Project Team

Table 5-8 Monitoring items

Index	Monitoring items
CSF 1: Improvements in financial-management skills	
KGI 1: 100% continuous bookkeeping practices	• Bookkeeping status at each enterprise
KPI 1: 60% self-bookkeeping practices	• Bookkeeping status at each enterprise
CSF 2: Improvements in product mix for enhanced marketing skills	
KGI 2: 20% average increase in gross operating profit	• Gross margin of each enterprise shown in the bookkeeping records
KPI 2: Increase in gross operating profit	• Gross operating profit of each enterprise shown in the bookkeeping records

Source: Project Team

For CSF 2 (Improvements in product mix for enhanced marketing skills), KGI showed a 20% average increase in gross margin. During the business-strategy development stage, Project Team received

information that leather manufacturers deal with different types of leather materials, whereas each manufacturer has its own inventory. Therefore, Project Team specifically set CSF 2 to focus on product-mix improvements by reviewing gross margins shown in their bookkeeping records. However, after monitoring commenced, it was revealed that not all participants had material inventory. Moreover, even if they did have material inventory, recordkeeping was not properly managed owing to their insufficient understanding of inventory concepts. Consequently, product-mix analyses based gross-margin figures were not implemented, owing to inadequate information in the bookkeeping records.

Project Team monitored and gave guidance to the participants. Owing to the advanced level of bookkeeping content, however, Project Team was not able to provide full assistance to the participants. This indicates that the quality of service provisions directly defines the achievement level expected from business enterprises. In order to fulfil the needs of the business enterprises, BDSPs need to acquire several key skills to challenge issues faced by the business enterprises.

(7) Lessons learnt and future roles of BDS

As for supporting leather producers, three areas that need to be improved are as follows: enhancement of management capability, enhancement of technological capability for improved product quality, and strengthening of marketing capacity.

To address the need for enhancement of management capability, the pilot project was arranged in such a way that the survey team provided bookkeeping formats to instructors who were carrying-out training sessions on financial accounting at private organizations, and the instructors gave the participants practical training from the basics of accounting through bookkeeping. As double-entry bookkeeping seemed to be difficult as a first step, single-entry bookkeeping was adopted. Further, as previously mentioned, an interest was expressed in product mixes; thus, Project Team decided to adopt bookkeeping using ledger sheets, by material. Nevertheless, eventually the team was not able to compile any data for analysing the product mix mainly because, although bookkeeping itself was continually performed, project participants did not control their inventories. It also might have been difficult for beginners in bookkeeping to deal with multiple books.

Speaking to the improvement of management capacity, obtaining loans from financial institutions can be a target to be achieved. Once they completed the pilot project and received funding from banks for expansion of their individual operations, there was a request for training on an ongoing basis. The team introduced Opportunities Industrialization Centre (OIC), which is a training organisation recommended by BOI and the participants identified contents of the training and submitted applications. By participating in the pilot project, they became motivated to improve their management capability and eventually understood the value of training even for a price—an unexpected result of the pilot project.

For the enhancement of technological capability, the following organizations may be helpful. The National Research Institute for Chemical Technology, Zaria (NARICT)—formerly called the Leather Research Institute of Nigeria (LERIN)—provides support regarding leather product quality, processing machines, and product testing. The institute is able to provide services on mechanisation of leather production and examination of product quality as required by customers.

Marketing through attendance at trade fairs, for example, should be aggressively implemented by the enterprises. Entries to trade fairs held by the chambers of commerce and industry of each state, as well as from other states, are common. Abuja and Lagos are considered by rural states to be great markets; thus, from the viewpoint of developing a new domestic market, it may be worth considering having rural states take part in the trade fairs held in these big cities.

5.3 Groundnut oil

5.3.1 Dawakin Tofa groundnut oil traditional processor project

(1) Pilot project participants

Traditional groundnut oil extraction processors in Dawakin Tofa have no history of receiving assistance from international donor agencies. The employees, whose average number is one to two per business, are of the same family in most cases and are employed as atypical workers. They often consist of village housewives working in their own backyards. In such village sites, where traditional culture remains strong, it was essential to become socially sensitive and gain the cooperation of the village heads for the smooth and seamless operation of the projects.

(2) Progress of activities concerning management capacity

Traditional groundnut oil extraction is a livelihood more than it is a business. Traditional groundnut oil extraction processors manage their business by roughly estimating their earnings and expenses without any detailed calculation. No processors perform bookkeeping accurately for money management. Not knowing the accurate amount of their earnings and expenses, their level of awareness concerning the management of the costs associated with the business, including the time it takes for oil extraction, the cost of raw materials, brokers, and human resources, and opportunity costs, is low. In particular, there is substantial waste in purchasing raw materials, as each processor purchases just enough raw groundnut materials from the markets or from nearby traders for each production run. To improve this situation, two pilot projects designed to develop management capability were conducted.

The first pilot project consisted of a group purchase of groundnuts to increase profit margins by reducing purchasing costs though collective buying of goods. Each association was composed of 13 women who could jointly purchase the raw materials for cash. The association registered with the Ministry of Commerce, Industry, Co-operative, and Tourism of the state government; it then opened a bank account.

The second project consisted of bookkeeping training. Project Team instilled in the project participants that their business management could be greatly improved by performing daily bookkeeping activities. Project Team also firmly established the importance of keeping financial records so the project participants would be able to develop future viable business plans and thus to be able to raise funds for business expansion. Project Team offered training that focused on the transition from performing menial tasks as a worker to running one's own business. As a result, the goal of establishing the importance of continuous bookkeeping to achieve success was realised.

(3) Progress of activities concerning processing skills and the work environment

Traditional oil processors perform the entire process of oil extraction by themselves, except for the process of grinding the groundnuts, which is outsourced to millers. Traditional oil processors directly purchase groundnuts at the Dawanau market, near the Tumfafi area, or purchase the groundnuts through middlemen. The fact that transactions at the market in Dawanau are processed by volume instead of by weight, gives sellers an advantage and makes it difficult for traditional oil processors to increase their income. With the aim of reducing cost through the joint purchase of raw groundnut materials, work efficiency improvement, and production volume increases, the pilot project was facilitated by the following methods:

1) Reducing costs through cooperative (group) purchases
In Tumfafi, raw groundnut materials are purchased in such small quantities as one extraction work per participant, which results in high production costs. With the goal of cost reduction by means of group

purchasing, Project Team helped organize a cooperative association and established a system of fund collecting.

2) Improvement of the oil extraction device

Improving the oil extraction device enabled shorter oil extraction time, reduced the labour effort, and eliminated the chance of directly touching raw materials by hand. The improvement reduced work hours by approximately two hours, resulting in a reduction in the workload, and an increase in the number of oil extraction operations from one to around two times per week. Furthermore, as a result of this improvement, fuel costs were reduced by NGN 20–50 per oil extraction. In addition, as workers less frequently touched the raw materials with their hands, it was noted that he improvement also helped improve hygiene (refer Annex 10 and Annex 11 for the details of hand powered oil extracting machine developed).

(4) Progress of activities concerning pricing and marketing

Problem solutions concerning pricing and marketing are directly related to raw material group purchasing activities. Therefore, an increase in the profit rate due to cost reductions resulting from raw material group purchasing had been expected. However, bargaining power through group purchasing was not exerted. Project Team recommended that the participants change their purchasing market from one in which they usually conducted purchasing activities to the Tafawa Balewa market, with a view to purchasing raw groundnut materials at lower prices. However, the idea was never brought to fruition.

(5) Accounting book analysis

At the beginning of the project, five participants were unable to enter data into the accounting book; however, with the support of Project Team, the participants' data from the sixth through the eighth period were able to be entered into the system. The amount of participants' trading was fairly small, with a trading frequency of only once or twice a week. Therefore, account information collected by Project Team was used for analysis. A synopsis of the group's activities, according to the sixth through eight-period time frame is listed below:

- The ratio of gross operating profit to sales was extremely low. Five of the four participants' earnings were negative: from -2% to -16%. Only one member earned 2%.
- Net operating profit was negative for all participants. On the average, NGN -2,000 per period was observed, and the ratio of net operating profits to sales was -11%.
- On comparing Dawakin Tofa processors to the groundnut oil traditional processors in Niger, it was found that the processors in Niger earned a positive amount. On average, NGN 21,000 per period for one enterprise was observed, and the rate of net operating profits to sales was also 25%. The comparison between Niger and this project follows.
  The average sales price in Kano State was NGN 302, compared to NGN 365 in Niger State. The oil prices in both states ranged from NGN 280 to 320, and the price difference between the two states is insignificant. However, the sales price of *kuli-kuli*, which is a by-product of oil processing, is only recorded in the accounting book of Niger— not in Kano. This is the main reason for higher sales in Niger State. Therefore, if Kano participants would add *kuli-kuli* sales to the records, the average sales could be raised and thus in turn, gross operating profits.
- The average purchase price of per unit amount of raw material (units of purchase and sale are different and a direct comparison of these unit prices is not possible) in Kano is NGN 390, and in Niger is NGN 225, which is significantly lower than Kano's. Within the participating enterprises in same state, there is no significant difference in purchase price, but purchase prices in Kano and Niger differs significantly. The gap of ratios of gross operating profit to sales in the two states is caused mainly by the purchase price difference.

- Items for expenses include milling, firewood, labour, and water. The ratio of the expensed to the sales was fairly small, that is, in the range of 3% to 5%; the average is 4%, and the ratio is stable among the participants.

The financial goal for the group will be increasing the ratio of gross operating profit to sales by reducing the raw material purchasing price. In addition, sales for *kuli-kuli* should be recorded.

(6) Achievement of indicators

Project Team developed business strategies based on the business consultation. Critical Success Factors (CSFs), Key Goal Indicators (KGIs), and Key Performance Indicators (KPIs) are described in Table 5-9. Table 5-10 shows the monitoring items for KGI and KPI.

For CSF 1 (Improvements in cost performance of raw material purchases), KGI is 20% cost reduction. Project Team proposed to start group purchase of raw materials in Tafawa Barewa market. Reasons for implementing group purchase are: (1) cheaper purchase of groundnuts at Tafawa Barewa than at Dawanau market; and (2) reasonable transportation costs, due to availability buses, despite the 30 minutes driving distance from the participants' residences in Dawakin Tofa LGA. At the beginning of project implementation, the participants showed an interest in trying to develop new business partners at Tafawa Barewa; however, the participants did not make an effort to purchase goods at the new market. Reasons for their inaction, which were revealed through monitoring and interviews, are as follows:

- Female enterprise owners, who travelled distances from their residences, found that it was not socially, nor religiously acceptable; hence, it is reasonable to assume that they hesitated to do so.
- The participants' perception of risk associated with changing from the markets with which they were accustomed to new markets overshadowed the economic benefits that may have arisen from the cost reductions.
- BDS provisions did not succeed in reducing social, and/or religious barriers; and the provision of price information and risk reduction services were insufficient to convince the enterprises to take the perceived risks.

A total of 15 group purchases were made. The average cost reduction based on the monitoring items was 6.3 %, which is lower than the KPI set for CSF 1; thus KGI 1 was not achieved.

As mentioned above, participants formed the female group for group purchases and also registered with the Kano Ministry of Commerce and Industry. Because the group developed the collective group regulation, KGI 2 was achieved during the pilot project period. In order to further facilitate the group activities, BDSPs should provide services in the areas of enhanced group management and procedure management for new group bank accounts.

For CSF 2(Increased production volume through application of manual oil extraction machines), KGI showed a production increase of 30% per participant, whereas KPI was set at 60% usage of the manual oil extraction machine. All the participants used the new oil extraction machine; thus the 60% target was achieved. Through the application of manual oil extraction machines, processing time has shortened, whereas production volume increased. These benefits supported the participants' continuous use of new machines.

Table 5-9 Business strategies of traditional groundnut oil processors

No.	CSF	KGI	KPI
1	Improvements in cost performance of raw material purchases	20% cost reduction for raw materials Establishment of regulations for the women's group	20% cost reduction for raw materials
2	Increased production volume through application of manual oil extraction machines	30% increase in production per participant	60% usage of manual oil extraction machine
3	Improvements in financial-management skills through bookkeeping practices	100% continuous bookkeeping practices	60% self-bookkeeping practices

Source: Project Team

Table 5-10 Monitoring items

Index	Monitoring items
CSF1: Improvements in cost performance of raw material purchases	
KGI 1: 20% cost reduction for raw materials	• Unit and market prices of groundnuts through group purchase
KGI 2: Establishment of regulations for the women's group	• Regulations of the women's group
KPI 1: 20% cost reduction for raw materials	• Unit and market prices of groundnuts through group purchase
CSF 2: Increased production volume through application of manual oil extraction machines	
KGI3: 30% increase in production per participant	• Change in groundnut oil production volume for each participant
KPI 2: 60% usage of manual oil extraction machine	• Percentage of production volume through manual oil extraction machines out of total production volume, for each participant
CSF 3: Improvements in financial-management skills through bookkeeping practices	
KGI 4: 100% continuous bookkeeping practices	• Bookkeeping status for each participant
KPI 3: 60% self-bookkeeping practices	• Bookkeeping status for each participant

Source: Project Team

For CSF 3 Improvements in financial-management skills through bookkeeping practices, KGI was 100% continuous bookkeeping practices, whereas KPI was set at 60% self-bookkeeping practices. Similar to the parboilers, the literacy rate is low among traditional groundnuts oil processors. At the inception of the monitoring period, children of the project participants supported recordkeeping activities; however, these support activities did not work well. As another option, the village head selected a volunteer to assist the participants with the bookkeeping practices; however, an unsuitable person was identified. As a result, participants were unable to keep records on their own, whereas the project staff kept records on behalf of the participants every week during monitoring visits. The traditional groundnut oil processors were unable to keep records on their own: they need further assistance to acquire bookkeeping skills and to grasp the importance of financial-record management. Organizations, such as BIC and WOFAN, which have a strong reputation for assisting female business entrepreneurs, are suitable BDSPs. From this example, it is justified that service costs for BDSPs differ between small and micro-scale enterprises. Assisting female micro-scale industrialists results in high costs and requires competencies, such as basic, but new, skills of business management.

(7) Lessons learnt and future roles of BDS

Pertaining raw material procurement, group purchasing should be introduced, thereby lowering purchase prices (unit costs of materials), since purchases will be made in large quantities. When purchasing materials, purchasers must check quality in order to ensure they do not lose profits; these measures will improve profitability. Devising marketing methods for groundnut oil and *kuli-kuli* is also required. The contact address of the group should be noted on the products with a view to expanding possibilities for receiving new business inquiries.

A bank account should also be opened to enable the management of activity funds. At the same time, the system for collecting group membership fees, which will be used for future group activities, including purchasing equipment and setting up storage warehouses, should be established. In addition to the fixed-amount collection of the membership fee, groups should examine the possibility of collecting fees on a weighted-average basis, corresponding to the usage of group purchasing. An association should set up a system for the joint sales of groundnut oil and *kuli-kuli*, thereby attempting to improve its income and profitability.

WAYS and WOFAN are mainly engaged in activities for assisting women's groups and are suitable as a business development service provider (BDSP). WOFAN has a system for offering loans. This organization is characterized by fine-tuned guidance and support. For example, loans start from amounts as small as 10 naira, and the practice of repaying the loan is repeated many times. The organization is also able to purchase groundnut oil, which can be used to practice joint sales. On the other hand, WAYS supports a variety of producer groups. If the content of its past support activities is compiled into a database, it may be possible to use such a database to match products, as well as sellers and purchasers.

5.3.2 Kano groundnut oil mechanical processor project

(1) Pilot project participants

Five businesses were selected to participate in the Kano groundnut oil mechanical processor project. They were chosen from the members of a mechanical groundnut oil processor association in Sharada of Kano Municipal who have the goals of making investments to improve productive capacity and who are willing to continually maintain sound financial records. Each of them began their respective businesses about five years ago; of the five businesses, three are small or medium-sized enterprises, whereas two are micro enterprises.

From September to February every year, a large quantity of groundnuts becomes available on the market. During this high season, the mechanical oil extraction processors increase their production volume; however, since the electricity supply is unstable, there has been an issue regarding how to secure stable production. Adversely, from March to August in a given year, it becomes more difficult to procure groundnuts—and the price rises. During this off-season, there is a sizable decrease in the productivity of groundnut oil processing, and many businesses have to suspend their operations. Among the participants in the pilot project, only one out of five businesses was producing groundnut oil at the end of July. When they cannot produce groundnut oil, they obtain income by producing oil from other oilseeds (such as sesame and hibiscus) or by manufacturing plastic containers, or other jobs. However, some do not have the means to obtain other income during the off-season.

(2) Results of activities concerning management capacity

In December 2010, training for the introduction of 5S targeting the improvement of the working environment at the mechanical oil extraction factory was conducted and Project Team has since

implemented weekly monitoring. The introduction of 5S depends on the willingness of managers to improve things because the concept is quite simple, with ideas such as: 'separate things that are necessary from those that are unnecessary in the factory,' 'throw away unnecessary things,' 'keep necessary items in order in a designated place,' 'clean the machines after use to prevent foreign matter from getting in,' and 'continue training all of the staff to manage the factory in a clean manner.'

For the 5S activities, Project Team proposed methods that did not cost money. For example, the main advice the team gave was to remove unnecessary things, install and store equipment properly, clean the floor, avoid putting raw materials directly on the floor, and clean the machines on a regular basis. The activities were implemented during the off-season for groundnuts, which was the best time to carry out improvements. However, because their income was low, due to the higher price and low availability of the groundnuts, it was difficult for some poorly-resourced participants to carry out activities such as concreting the floor or setting up partitions between work areas.

(3) Progress of activities concerning processing skills and the work environment

Filtering is necessary, because refined oil contains a small amount of matter, such as particles and water, which oxidize oil, darken it, and can cause odours when the oil is stored. At some worksites, oil is refined in a drum without being filtered, and then only scooped supernatant is packed and shipped. In the pilot project, the installation of a simplified filtering system, using an in-car filter, was recommended. Among the target businesses of the pilot project in Kano State, fryers for roasting groundnuts were installed at some of the worksites; however, no worksite is actually carrying out the roasting process at this time. Subsequently, it has been explained that roasting is not performed, as it darkens the colour of the oil and it makes oil production more time-consuming. However, considering the flavour of the groundnut oil, this is an important process. Therefore, Project Team recommended the introduction of the roasting process.

(4) Results of activities concerning pricing and marketing

Consumers prefer their groundnut oil to be as clear as possible; therefore, this is a condition that is necessary for it to sell well in the market place. The reason why producers in Kano do not roast the nuts before extracting oil, or do not add onion, is that they are worried that the colour of the oil may turn black.

Some businesses also examine whether to apply for registration with Nigeria's National Agency for Food and Drug Administration and Control (NAFDAC). To obtain this accreditation, the analytical results of the product must satisfy the standards established by the Standards Organization of Nigeria (SON), and the worksite must satisfy NAFDAC's Good Manufacturing Practice (GMP) standards. Some of the requirements that the worksite should satisfy are as follows: production equipment should be made of stainless steel, the floor of the worksite should be tiled, a refining system should be introduced, and vitamin A should be added. One of the participating businesses paid to renovate its equipment in order to ensure that its products could be labelled with a NAFDAC number—providing the enterprise with a strong marketing tool to be circulated through logistical systems of large supermarkets: accreditation that the product adhered to NAFDAC/GMB standards and it was therefore certified safe.

(5) Accounting book analysis

Four out of the five project participants commenced bookkeeping activities. However, three participants suspended their bookkeeping operations after the fourth period; thus, only one enterprise kept data from the first through eighth period. The participants wanted to know the ratio of gross operating profits to sales by product and material (product: oil, cake, sludge, material: nuts, cake). Project Team prepared a customized form used for bookkeeping solely by leather product

manufacturers. However, owing to the limited information obtained, only the average gross operating profit was made available. The financial characteristics of the groups are summarised below:

- The difference of the average gross operating profit ratio to sales among the enterprises was considerable. For the three participants who suspended their bookkeeping operations, the average gross operating profit ratio to sales was 5%, 10% and 52%. The enterprise that kept records until the eighth period was 9%. As analysed below this could have resulted from an incorrect recording of purchases.
- The average sales price per period for four participants was NGN 54,000 to NGN 57,000, and differences among these participants were slight. The analysis was conducted by eliminating one enterprise's data for one period, which was one digit smaller and must be an incorrect record. The per-period average sales price for each participant ranged from NGN 52,000 to NGN 58,000; NGN 49,000 to NGN 55,000; NGN 51,000 to NGN 67,000; and NGN 45,000 to NGN 60,000; and the difference between periods is fairly minimal.
- The average purchase prices for four participants were recorded as NGN 10,000, NGN 21,000, NGN 52,000 and NGN 76,000, and appeared to include errors. Although a small amount of peanut cake was included, the major purchase was nuts, and since the group was involved in a large amount of trading, it can be concluded that recording errors for the purchase prices of nuts must have occurred.
- Expenses included: salary, electricity, transportation, and spare parts for machines. The ratios of expenses to the sales for participants were 4%, 4%, 7%, and 4%. Excluding one participant, the differences between the ratios were small. Sales and expenses seem to have been recorded fairly accurately.
- The average net operating profit per period for the three participants who suspended production are NGN 316,000, NGN 72,000, and NGN 1,885,000, and the differences among these values are sizeable. The erroneous purchasing records should be the cause for the large differences. For the participant who kept records for the entire period, the net operating profit per all periods is NGN 515,000. It is not possible to understand whether the large loss is caused by erroneous recordkeeping or a continuation of production under unfavourable market conditions.

The financial goal for the group should be accurate bookkeeping. By comparing records of the groundnut oil mechanical processors in Niger, only one participant's data can be considered reliable, and the other three participants' data are considered to be prone to error.

(6) Achievement of indicators

Project Team developed business strategies based on the business consultation. Critical Success Factors (CSFs), Key Goal Indicators (KGIs), and Key Performance Indicators (KPIs) are described in Table 5-11. Table 5-12 shows the monitoring items for KGI and KPI.

For CSF 1 (Improvements in financial-management skills through bookkeeping practices), KGI is 100% continuous bookkeeping practices. Three out of four participants ceased their groundnuts oil processing business, due to high market prices of groundnuts. The percentage of self-bookkeeping practices was 66 %; therefore, it is reasonable to say that KGI was achieved (since three out of four participants ceased running their businesses, it is not worth calculating the average KPI percentage).

For CSF 2 (Improvements in quality of groundnut oil through application of a new filtering system), KGI was the brighter and clearer oil without impurities, whereas KPI was the percentage of oil processed through the new filtering system. In the consultation with the chairman of the groundnuts oil processors association, Project Team agreed to the installation of the new filtering system by him and other association participants. However, after commencement of the monitoring period, the chairman became involved in political activities for the state election campaign and eventually lost his commitment to the project. As a result, the new filtering system was not applied at the chairman's

factory, which meant that CSF was not achieved. Participants who continued their business activities and bookkeeping practices during the monitoring period started to consider the application of the filtering system. Since these business activities were performed during the off-season and did not allow procurement of sufficient capital to make investments for the filtering system, they could not apply this system. By being able to utilize their newfound bookkeeping 'prowess', participants in the project considered applying for loans at the beginning of the groundnut oil business season.

Table 5-11 Business strategies of mechanical groundnut oil processors

No.	CSF	KGI	KPI
1	Improvements in financial-management skills through bookkeeping practices	100% continuous bookkeeping practices	60% self-bookkeeping practices
2	Improvements in quality of groundnut oil through application of a new filtering system	Brighter and clear oil without impurities after filtration	60 % of the oil is processed through the new filtering system
3	Improvements in productivity and working environment through 5S activities	Progress of KPI	Evaluation of 5S activities based on the checklist

Source: Project Team

Table 5-12 Monitoring items

Indicators	Monitoring items
CSF 1: Improvements in financial-management skills through bookkeeping practices	
KGI 1: 100% continuous bookkeeping practices	• Bookkeeping status for each participant
KPI 1: 60% self-bookkeeping practices	• Bookkeeping status for each participant
CSF 2: Improvements in quality of groundnut oil through application of a new filtering system	
KGI 2: Brighter and clear oil without impurities after filtration	• Groundnut oil produced with filtering system
KPI 2: 60 % of oil is processed through the new filtering system	• Percentage of groundnut oil produced with filtering system out of the total volume of groundnut oil produced by each participant
CSF 3: Improvements in productivity and working environment through 5S activities	
KGI 3: Progress of KPI	• 5S score based on the checklist
KPI 3: Evaluation of 5S activities based on the checklist	• 5S score based on the checklist

Source: Project Team

For CSF 3 (Improvements in productivity and working environment through 5S activities), KGI was the score progress of the 5S activities checklist. As mentioned in 4.3.2 (2), 5S activities were applied in two out of four factories: activities, such as clean-up of machines and factories after use, and return of the working tools to the shelves after use were carried out by the workers under the strong leadership of the managers. The average score of the 5S activities was 11.5; thus, it is reasonable to say that CSF target was achieved during the pilot project period.

(7) Lessons learnt and future roles of BDS

In addition to strengthening the ability to continue bookkeeping and 5S for management capacity development, obtaining accreditation from and registering with NAFDAC by MSMEs must be supported. They need to register their factory facilities and products. Many MSMEs in the food industry wish to register with NAFDAC; however, they do not have information on the requirements for facilities and products, and do not know the procedures. Project Team visited NAFDAC and interviewed companies that have NAFDAC accreditation; however, the actual procedure remains unclear, costly, and time consuming. The documents required to register a food product with NAFDAC are as follows: the company's register, product label, operating procedures, pest control certificate, trademark registration certificate, CV of the manufacturing manager with academic background involved in food processing, health certificates for the workers, company organization chart, list of equipment, past payment certificates, water-quality testing certificate, certificates for managers of manufacturing and quality control, in-house laboratories, and product information. Large enterprises, with ample staff, may be able to prepare all of these documents; however, it is difficult for MSMEs to prepare them.

The following is expected of the BDS: is to explain to MSMEs in the food industry the necessary procedures for NAFDAC registration to the MSMEs in the food industry, to ask research institutions including universities, to supervise MSMEs' technology and documentation, and to provide training and licenses to those who are going to be managers of food manufacturing or quality control. By registering with NAFDAC, they can expand their business not only to local markets but also to large-scale supermarkets and urban markets. This is one of the reasons why the improvement of the standards and certifying system for NAFDAC registration should be carefully considered.

CHAPTER 6. Results of pilot project implementation in Niger State

6.1 Shea products

6.1.1 Kacha shea butter traditional processor project

(1) Pilot project participants

This pilot project targets Emiworo village and Egbanasara village in Katcha, Niger State. The participating processors in the two villages are all housewives. They buy processed shea kernels and produce shea butter using a traditional manual method—kneading the shea nut paste by hand. During the harvest season of the shea fruit, they are also engaged in processing shea kernels. Manual kneading is a very laborious and time-consuming task, as it must be done continually. In three days, a processor processes one bag of shea kernels, producing 1–1.5 containers (20 kg) of finished shea butter.

(2) Results of activities concerning management capacity

Production by the traditional shea butter producers is household production which is not separated from household economics from the point of view of financial management. The processors' literacy rate is low and very few of them keep financial records. Thus the pilot project provided bookkeeping training to record sales, purchase, stocks, and cash and expenditures. The purpose of the bookkeeping training was to have the processors understand the status of their own businesses, and help them develop business plans and obtain loans from financial institutions.

Although literate school-age children were asked to do the actual bookkeeping, the problem was that the processors were incapable of reading the records of the accounting books. Simple bookkeeping methods such as application of pictograms were introduced. Recording sellers of shea nuts and buyers of shea butter were done by pictograms along with Arabic numbers and figures of notes of various denominations and traded goods to express monetary values and quantities traded.

(3) Results of activities concerning processing skills and the work environment

For processing skills, the pilot project experimented different manufacturing processes used among the shea butter processors. Types of work, tools used, working hours, and the work environment were examined, and the quality of produced shea butter was compared with the production processes. Relations between the processing methods and the amount of free fatty acid (FFA), which influences the quality of shea butter, were examined to establish standard production procedures. Results of these activities were shared with participants (for details of improvement of shea butter extraction, see Annex 5).

(4) Results of activities concerning pricing and marketing

Buyers were invited to attend workshops targeting processors for three days in June and July 2011 to promote shea butter marketing. A display board was created to show responses of traders to publicised price information by the board. It was expected that publicising market prices would increase burgening power of producers against traders, and reduce of incidences of low price sales by producers due to their weak position.

Source: Project Team

Figure 6-1 A board showing the selling price of shea butter

The price boards were established in January 2011, and the participating enterprises started announcing of the sales prices started on the same month by the participating enterprises. However, the price boards were not fully utilised as envisaged by Project Team. The boards did not show the latest prices; they kept showing the highest selling prices recorded more than a month ago. Traders obtained the contact information from the board and called the pilot project participants, but participants made no follow-up of the call was made by the participants to market their products.

In terms of quality, although a better grade of shea butter was produced, it was hard to reflect this in the purchase prices, as there were no practical quality standards that the processors could use as a quality control target. The current quality standards as shown in Table 6-1 were stipulated by the Standard Organization of Nigeria (SON), but authorities that were capable of testing the quality of shea butter were limited and not accessible by traditional shea butter processors. The standards were not practical for small traders and traditional processors. Therefore Project Team developed and introduced a simple testing kit that the processors at the production site would be able to use.

Table 6-1 Standard of shea butter quality (SON)

Parameters	Unrefined shea butter		
	Grade 1	Grade 2	Grade 3
Moisture content (%)	0.05 (max)	> 0.05-0.2	>0.2-2.0
Free fatty acid/FFA (%)	1.0 (max)	>1.0-3.0	>3.0-8.0
Peroxide value (meq/kg)	10.0 (max)	>10.0-15.0	>15.0-50.0
Insoluble impurities (%)	0.09 (max)	>0.09-0.2	>0.2-2.0

Source: Project Team

(5) Accounting book analysis

The participants were consisted of five enterprises in Egbanasara village, and five in Emiworo village. The fifth- and six-grade primary-school girls kept accounting books for the entire pilot project duration of 36 weeks, and supported their mothers' bookkeeping. The only two groups including the one of the ten enterprises and one of yam trading kept the first period's inventory and looked into the quality of materials that came in and went out in each period to calculate the transition of material

stock can be calculated. The other eight enterprise groups recorded the final material and stock as zero. The following is the characteristics of the group.

- The average ratio of gross operating profit to sales in the nine periods for Egbanasara village was between 34% and 40%; the comparable ratio for Emiworo village the ratio was between 40% and 49%. In both villages, differences among the participants were small. The average ratio of gross operating profit to sales for Emiworo village was larger than that of Egbanasare village possible because all the participants in Emiworo village recorded the cost of raw material 20% to 40% lower than the actual cost for the first period. Thus, Emiworo's first period records were probably incorrect.
- The shea butter sale prices increased from NGN 3,200 in the first period to NGN 4,000 in the fourth period. The price of raw material also increased from NGN 2,200 in the first period to NGN 2,800 in the fourth period. These price changes are considered as seasonal price fluctuations. From the fourth to eighth periods, for all the ten participating enterprises, the sales price stayed NGN 4,000 and the purchase price also stayed NGN 2,800. In the ninth period purchase, the purchase price declined from NGN 2,800 to NGN 1,500, and the sales prices for the participants were around NGN 4,000. As a result of the pilot project, the participants learned improved procedures and techniques to produce higher quality shea butter. However, the improved products did not fetch higher prices because the local market did not recognise high quality indicated by low EFA value. Therefore, the participants did not adopt the new procedures, and no change in sales and prices was recorded in the account books.
- Expenditures include costs of milling and transportation. The ratio of the expenditures to the sales was 14 to 18% for Egbanasara village, and 17 to 21% for Emiworo village. Differences in expenditure ratios among the participants in the same village were small.
- The average net operating profit for the five participants of Egbanasara village was between NGN 3,500 per period (18% of the sales) to NGN 5,900 per period (23% of the sales); for the Emiworo's participant, it was NGN 5,100 per period (18% of the sales) to NGN 8,900 per period (32% of the sales). The participants with larger sales show larger ratio of net operating profit.

(6) Achievement of indicators

Table 6-2 and Table 6-3 show the Critical Success Factors (CSFs), Key Performance Indexes (KPIs), and Key Goal Indicators (KGIs) set up based on business consultation targeting traditional shea butter processors. The items shown in Table 6-4 were monitored in order to evaluate the achievement of each indicator

Table 6-2 Business strategy of traditional shea butter processors in Emiworo village

No.	Critical Success Factors (CSFs)	Key Goal Indicators (KGIs)	Key Performance Indexes (KPIs)
1	Improve business management capacity.	• Continuous record keeping: 80%	• Attendance in follow-up group meetings: 100% • Self-record-keeping: 100%
2	Improve quality through the introduction of a simplified test kit and the standardization of the processing method.	• Shea butter of grade 2 (FFA less than 3%) can be produced on purpose.	• Implementation of quality tests using the kit: 80% • Practice of the standardized processing method: 80%
3	Increase profit from large-scale buyers.	• Increase of gross operating profit by 10%	• Increase of sales to large-scale buyers by 10%

Source: Project Team

Table 6-3 Business strategy of traditional shea butter processors in Egbanasara village

No.	Critical Success Factors (CSFs)	Key Goal Indicators (KGIs)	Key Performance Indexes (KPIs)
1	Improve business management capacity.	• Continuous record keeping: 80%	• Attendance at follow-up group meetings: 70% • Self-record-keeping: 80%
2	Improve quality through the introduction of a simplified test kit and the standardization of the processing method.	• Shea butter of Grade 2 (FFA less than 3%) can be produced on purpose.	• Implementation of quality tests using the kit: 80% • Practice of the recommended processing method: 80%
3	Increase profit from large-scale buyers.	• Increase of gross operating profit by 10%	• Increase of sales to large-scale buyers by 10%

Source: Project Team

Table 6-4 Items to be monitored

Indicators	Monitoring items
CSF 1: Improve business management capacity.	
KGI 1: Continuous record-keeping: 80%. KPI 1: Attendance in follow-up group meetings: 70%. KPI 2: Self record-keeping: 80%.	• Bookkeeping situation at each firm • Number of traders who took part in the meetings • Number of transactions and number of items to record
CSF 2: Improve quality through the introduction of simplified test kits and the standardization of the processing method.	
KGI 2: Shea butter of grade 2 (FFA less than 3%) can be intentionally produced on purpose. KPI 3: Implementation of quality tests using the kit: 80% KPI 4: Practice of the recommended processing method: 80%	• Number of production batches • Number of batches for which quality was evaluated as grade 2 • Number of production batches • Number of batches for which a test-kit test was implemented • Number of production batches • Number of batches for which the recommended method was practiced
CSF 3: Increase profit from large-scale buyers.	
KGI 3: Increase of gross margin: 10% KPI 5: Increase of sales to large-scale buyers by 10%	• Baseline (average gross operating profit of the first through to the fourth week) • Weekly gross margin of each processor • Gross sales • Sales to large-scale buyers

Source: Project Team

For “CSF 1: Improve business management capacity”, in each village, continuous record keeping was set as a Key Goal Indicator. As Key Performance Indicators, “Attendance in follow-up meetings” and “Self record-keeping” were selected. The monitoring activities have been conducted for nine months since November, 2011. Table 6-5 shows a few results.

Table 6-5 Niger State Katcha Project CSF 1 results

Village Names	Attendance rate of follow up meetings (KPI 1)	Rate of self-record keeping (KPI 2)	Target figures of KGI 1	Achievement rate of KGI 1
Emiworo	92%	100%	80%	96%
Egbanasara	91%	100%	80%	95%
Average	92%	100%	N/A	96%

Source: Project Team

The average attendance rates of both villages are over 90% and the self-record keeping ratio is almost 100%. Therefore, all the target figures for CSF1 are achieved. The following are the possible contributing factors to the achievement of these indicators. During the accounting training, literate family members of the participants were requested to attend to training sessions, and they helped target enterprise owners to keep financial records. It is one of the factors that raised the achievement level of KGIs and KPIs. Another factor is that, through the record keeping, target enterprise owners understood better the meanings of keeping financial records. Moreover, here are a few incidents through which the target enterprise owners learned a clear benefit of keeping financial records: in Emiworo village, when a shea butter association applied to a bank for a loan, association members were requested to show their financial records. FADAMA III also requested the target enterprise owners to show their financial records as a condition for providing some supports.

As for "CSF 2: Improve quality through the introduction of a simplified test kit and the standardization of the processing method," KGI is set as "Shea butter of grade 2 (FFA less than 3%) can be intentionally produced on purpose." Project Team held in June 2011 a workshop inviting large scale buyers to show the quality of target enterprises' products. In the workshop, the team conducted a quality test of shea butter produced by the target enterprises of both Emiworo and Egbanasara with a test kit. The test results confirmed that produced shea butter had better than grade 2 in the FFA level with a method suggested by the project (for improved production method and the test kit see Annex 12).

However, neither KPIs, "Implementation of quality tests using the kit: 80%" nor "Practice of the recommended processing method: 80%" were achieved. Followings are reasons of it. Recommended method by the project was considered to be more labour-intensive and time-consuming by the processors. There was no guarantee to sell their products with higher prices, even if processors produce shea butter with the recommended method compare to their ordinary production method. These two factors halt the target enterprise owners achieve these two target goals.

As for "CSF 3: Increase profit from large-scale buyers," is concerned, KGI 3 was set as "Increase 10% of gross margin." As for "KGI 3: Increase of gross margin," no financial data from the previous year was available. Therefore, based on the financial data from the first through to the fourth weeks that had been recorded since training on financial bookkeeping started, the weekly average profit margins of each processor were set as the baseline for evaluation.

To achieve the KGI 3, "KPI 5: Increase of sales to large-scale buyers by 10%" was selected as a target goal to be achieved. Table 6-6 shows the average gross operating profit of the target enterprises in Emiworo village and Egbanasara villages. Baseline figures are high because the first four weeks of the project monitoring period were the time that shea butter was sold with higher prices than in other periods in the year.

Table 6-6 Niger State Katcha Project CSF 3 results (Unit: Naira/Month)

Village name	Baseline (KGI 3) (NGN/month)	Average gross operating profit (NGN/month)	Ratio of increase or decrease	Target figures (KGI 3)
Emiworo	3,494	2,342	-67%	10% increase
Egbanasara	2,160	1,860	-86%	10% increase
Average	2,827	2,101	-77%	

Source: Project Team

Regardless of the baseline figures for the KGI 3, the target figures were not achieved. The major reason is that the large-scale buyers did not conduct many business transactions. Moreover, it took more time than Project Team expected to build a trusting relationship between the large-scale buyers and the target enterprises owners. It took a few months to identify large-scale buyers trading in Nigeria who were interested in business in Niger State, explain the Project to them, and get them interested. With support from the Niger State Commodity and Export Promotion Agency (NSCEPA) and a GIZ-supported project, the Project invited those large scale buyers to Emiworo and Egbanasara villages to show the suggested processing methods and the quality of the products made through the methods. The buyers who took part in the workshop acknowledged the high quality of shea butter of the target enterprises and expressed an interest in forming a business relationship with them. The large scale buyers purchased some sample products. However, the buyers have not placed any constant orders for the products. It was difficult to achieve the target figures of KGI 3 because the large-scale buyers made almost no purchase during the pilot project period.

(7) Lessons learnt and future roles of BDS

Financial record keeping was successful and target enterprise owners understood its benefits. They are also capable of continuing self-record keeping after the pilot project. Although sufficient data was not collected through monitoring, some test results proved that the target enterprises would be able to produce shea butter with better quality than grade 2 in the FFA level. However, their capacity building in higher quality production did not lead to an increase in their profit, and it will take a while to establish a trusting relationship with large-scale buyers who understand the quality of shea butter. The small number of buyers who understand shea butter quality discourages the target enterprise owners from using test kits and practicing the recommended production method. Marketing efforts are crucial to increase their gross margin.

As stated above, it takes a long time to establish a trusting relationship with large-scale buyers from distant locations. In addition, to such relationship, it is necessary to address such issues as high transportation cost, lack of a payment method from a distance, and the target enterprises' limited capacity to produce a large volume with uniformed quality by a delivery deadline.

The pilot project has aimed at improving the product quality and subsequently increasing earnings. An improvement in quality and the opportunity to increase individual earnings have been observed. However, it is difficult for processors to take orders directly from buyers due to language problems and other difficulties. In addition, when processors receive bulk orders, the quality of the shea butter varies greatly from one processor to another in the same group. Thus it is necessary to improve the quality in all processors. Formulating processor group would help solve problems on payment and improve the efficiency of operations.

6.2 Groundnut oil

6.2.1 Kontagora groundnut oil traditional processor project

(1) Pilot project participants

All traditional groundnut-oil processors are women. Most of them are engaged in groundnut-oil processing as an individual business. However, to promote group purchasing of materials as well as self-processing, they have established an association of their business since the pilot project started. Kontagora is a groundnut-producing area where the raw material can be purchased at lower prices (NGN 150/mudu) than the other areas in the peak season. In addition, as the groundnut oil produced here has high quality at a reasonable price, traders come to buy it from both inside and outside the state. During the off-season, however, the oil processors must buy raw groundnut material at high prices of NGN 200 to 250/mudu. Thus the traditional groundnut-oil processors lose out to competition from less expensive imported vegetable oils, and their production volume declines.

The pilot project aimed to improve management capacity through bookkeeping, reducing costs and improving profitability through group purchasing of the groundnut raw material, and increase production through the use of manual oil extractors. The processors were divided into four groups according to the districts in Kontagora. Each group selected a leader, and the four leaders thus were designated as the subjects of the pilot project.

(2) Results of activities concerning management capacity

On average, the traditional oil processors that participated in the pilot project have one or two employees. When they were busy, the processors outsourced some of their operations to contractors nearby in an attempt to raise productivity. Some processors outsource all of the processes (roasting, crushing, milling, and kneading), while others outsource only some of them. The outsourcing ratio in terms of expense had been 4% at the beginning, but it dropped to 2% by the end of July 2011. The introduction of manual oil extractors seems to have contributed to reducing their working hours. Although many of the traditional oil processors are illiterate and the participants of the project have never kept financial records, they are now becoming able to keep accounting records with the help of children who can read and write. Some participants have pointed out that bookkeeping enabled them to clearly understand the concepts and business situation regarding sales, costs, profit, and stock.

(3) Results of activities concerning processing skills and the work environment

Kneading is the most time- and labour-consuming of the working processes of traditional oil extraction. It is also the most important process as it determines the oil extraction volume and quality of the product. Many processors are outsourcing this process, and they face various problems, including high outsourcing costs, production stoppages when machines at outsourced processors stop operating due to blackouts, and difficulties in adjusting quality and production volume.

Oil extraction tests were performed following the introduction of the improved manual oil extractors in Kano State. It became apparent that the extractors require far less work to extract oil. As a result, two machines have already been purchased as of January 2011 (for details of this improved manual oil extractors see Annex 10 and Annex 11).

(4) Results of activities concerning pricing and marketing

Three members were chosen from each of the four groups composing the pilot project, and the 12 members in total established an organization called the Nagarata *kuli-kuli* Traditional Processor Association." The association aims to reduce costs and improve profitability by introducing the group

purchasing of materials. During the pilot project, the association implemented group purchasing 21 times in total.

As for the amount of groundnut group purchasing conducted, when the pilot project started in November 2010, the purchased amount was 67 mudu (about 100 kg). Then, in July 2011, this increased to 500 mudu (about 800 kg). The frequency of purchasing has increased to as often as once a week. Groundnut prices have hit a plateau since June 2011, and market demand for groundnut oil and its by-product of *kuli-kuli*, as a fertilizer, has expanded. These changes have greatly influenced the purchase amount increase. In addition, the fact that the association has already carried out group purchasing for around nine months and now thoroughly realizes its merit further suggests the increasing of the purchase amount.

(5) Accounting book analysis

All the four participants kept their record from the first to ninth period. It was the fifth- and sixth-grade children of the families who recorded the data, indicating the high motivation of the enterprises to participate in the project. The followings are the characteristics of the group:

- The average ratios of gross operating profit to sales for the total period are 29%, 28%, 28%, and 28%, respectively. The variation among these ratios is a small. On the other hand, each participant's ratios of gross operation profit to sales per period show a large variation as they are ranging from -11% to 62%, -23% to 50%, -14% to 47%, and -10% to 46%. The difference was brought by the low gross operation profit in the first period, and the off-season, i.e., third to six periods. During these periods, gross operating profit was sometimes negative.
- The average sales price is in the rage of NGN 344 to 396, and the average purchase price ranges from NGN 217 to 237. The differences among the participants were small. However, seasonal change is large, and during the third to sixth off-season periods, the sales price increased but the purchase price overwhelmed the sales price, thus the gross margin rate decreased.
- Detailed examination of trading records revealed that sales price dispersion among the enterprises was small, and the price increase in each period has the same tendencies. The sales amount of *kuli-kuli,* the by-product, was recorded in the book, and it raised the total sales price, which was the major difference among the traditional groundnut oil processors of Kano State.
- Differences in the purchase price in the same period are small. The group purchase lowered the purchase price, and the group purchase seems to have moderated seasonal price hike. However, it is not possible to discern the extract extent of the benefit from the group purchase from the accounting data.
- The expenses include the costs of milling and transportation. In case of the traditional groundnut oil traditional processors in Kano, no firewood and labour expenses were recorded. The ratios of expenditures to the sales of each participant were 2%, 3%, 3%, and 3%. The ratios as well as amounts were small.
- The average net operating profits per period for each participant were NGN 22,000 (26% of the sales), NGN 20,000(25% of the sales), NGN 21,000(24% of the sales), and NGN 23,000 (25% of the sales). The differences among the participants are small. The ratios for each period vary widely from -8% to 60%.

The accounting data shows that the financial goal for the group is to lower the purchase price during the off season.

(6) Achievement of indicators

Table 6-7 shows the Critical Success Factors (CSFs), Key Performance Indexes (KPIs), and Key Goal Indicators (KGIs) set up based on business consultation targeting traditional groundnut oil processors. The items shown in Table 6-8 were monitored in order to evaluate the achievement of each indicator.

Table 6-7 Business strategy of traditional groundnut oil processors

No.	Critical Success Factors (CSFs)	Key Goal Indicators (KGIs)	Key Performance Indexes (KPIs)
1	Improve business management capacity	• All the selected firms can keep financial records.	• 75% of all the firms can keep their financial records by themselves before weekly follow-ups. • All the selected firms participate in the follow-up meetings.
2	Increase profitability by reducing cost	• The cost of raw materials is reduced by 10%.	• Groups and rules are formed for group purchases. • The group members follow the rules for group purchases. • 50% of all the raw materials for total production are purchased by the group.
3	Increase production volume by improving production capacity	• The annual production volume is increased by 10%.	• The total volume of purchased raw materials is increased by 10%. • 20% of their total oil extraction is carried out using a manual oil extractor.

Source: Project Team

As for "CSF 1: Improve business management capacity," "75% of all the firms can keep their financial records by themselves before weekly follow-ups" and "All the selected firms participate in the follow-up group meetings" were set as KPIs. The nine-month monitoring between November 2010 and July 2011 revealed that 97% of the target enterprise owners achieved both in KPI 1 and KPI 2. Therefore, the target figure of KGI 1 was almost accomplished. The target enterprise owners are now able to find out their own sales volume, cost, and gross margin.

Most of the target enterprise owners can neither read nor write. Thus, in the accounting training, literate family members were invited to learn the accounting system. These family members helped the enterprise owners continue self-record keeping. Group purchasing and introduction of manual oil extractors were the main activities to increase profit ratio and production volume through cost reduction. Hence, keeping financial records was required activities to find out gross margins and cost reduction rate. Also, the abovementioned activities brought positive results and booted the morale of the target enterprise owners to keep financial records.

For "CSF 2: Increase profitability by reducing costs," "The cost of raw materials is reduced by 10%" was set as KGI 2. The items to be monitored were the formation of a group and rules for group purchasing, carrying out group purchases following the set rules, and adhering to the ratio (50%) of raw material purchases by the group.

Table 6-8 Items to be monitored

Indicators	Monitoring items
CSF 1: Improve business management capacity	
KGI 1: All the selected firms can keep financial records.	• Bookkeeping situation at each firm
KPI 1: 75% of all the firms can keep their financial records by themselves before weekly follow-ups.	• Number of firms keeping financial records
KPI 2: All the selected firms participate in the follow-up group meetings.	• Number of firms that participated in meetings
CSF 2: Increase profitability by reducing costs	
KGI 2: The cost of raw materials is reduced by 10%.	• Price at Kontagora market • Unit purchase price at target firms • (per mudu)
KPI 3: Groups and rules are formed for group purchases.	• Seven steps to formation (1–4: preparatory meetings; 5: signatures on the rules; 6: registration of the group; 7: opening bank account)
KPI 4: Rules for group purchases are followed by the group members.	• Number of group purchases carried out by the group
KPI 5: 50% of all the raw materials for total production are purchased by the group.	• Total volume of raw material purchased • Volume of raw material purchased through group purchasing
CSF 3: Increase production volume by improving production capacity	
KGI 3: The annual production volume is increased by 10%.	• Baseline (average production volume of four weeks after the Pilot Project started) • Weekly average production volume at the firms
KPI 6: The total volume of purchased raw materials is increased by 10%.	• Baseline (average purchase volume from week 1 to week 4) • Weekly average purchase volume at the firms
KPI 7: 20% of their total oil extraction is carried out using a manual oil extractor.	• Weekly total oil extraction at the firms • Weekly oil extraction at the firms carried out using a manual oil extractor

Source: Project Team

Table 6-9 Niger State, Kontagora Project CSF1 results

Target Enterprise	Self-record keeping rate (KPI 1)	Attendant rate of follow up meetings (KPI 2)	Target figure of KGI 1	Achievement rate of KGI 1
Traditional Groundnut Oil Processors	97%	97%	100%	97%

Source: Project Team

Table 6-10 Niger State Kontagora Project CSF 2 results

KPI	Baseline	Progress	Rate of achievement
KPI 3	Baseline figure: 100 %	Progress of rule formulation: 60 %	Achievement rate of KPI: 60%
KPI 4	Baseline figure: 20 times	Number that followed the rule for group purchase: 20 times	Achievement rate of KPI: 100%
KPI 5	Total purchasing volume of raw materials: 11,421 mudu	Total purchasing volume of raw materials with group purchase: 5,737 mudu	Achievement rate of KPI: 50%

Source: Project Team

To measure the rate of compliance with association rules on group purchase, the achievement rate based on progress was determined.[16] The core members of the association formulated, agreed upon, and signed the association rules for group purchase. However, the state government is spending more than seven months to assess then approval by the association. The target enterprises are still waiting for a response from the Niger State Ministry of Commerce and Industry. Therefore, it is concluded that the 60% achievement rate for KPI 3 is a result of the time-consuming process of registration by the state government.

20 group purchases were conducted during the financial record keeping monitoring period from the beginning of November 2011 to the middle of July 2011. The achievement rate of KPI4 was 100% as the association rules were followed in every group purchase. It was easy for the target enterprise owners to follow the rules because they themselves and some other core members prepared them. Also they knew that group purchasing would reduce the price of raw materials and any non-compliance with the rules would raise the cost for everyone. This encouraged the members to respect the rules.

As for KPI 5, the total volume of purchased raw materials during the pilot project period was 11,421 mudu. Out of the total volume, 5,734 mudu of raw materials were purchased through groups. Therefore, the goal of 50% of the total purchased volume of raw materials was accomplished. Group purchase started when the price of raw materials began to increase. The higher price promoted the target enterprise owners to practice continuous group purchasing. Financial record shows that the price of raw materials with group purchase is lower than the one with individual purchase. Group purchase was not done every week because the volume of available materials was limited, but 20 groups purchasing during nine months indicate that group purchasing made a strong impact on the target enterprises and is becoming a normal practice for acquiring raw materials.

As for KGI 2, the cost of raw materials is reduced by 11% and the target indicator was achieved. During the project monitoring period, an average market price of groundnuts in Kontagora is NGN 247 per mudu while an average price of groundnuts with group purchase was NGN 220 per mudu. 20 times of group purchase increased a ratio of cost reduction in raw materials. There is a possibility that more volume of purchase by group reduce unit price of raw materials. Thus, the reduction rate of cost for raw materials will increase if the target enterprises continue group purchases throughout the year.

Since no data on the previous year's production volume is available for "KGI 3: A total of 10% of the annual production volume is increased," the average production volume in the four weeks after the Pilot Project started was set as the baseline for the evaluation of "CSF 3: Increase production volume

[16] Step 1-4 is formulation of the association rule. (There are 4 steps to formulate association rule and each step adds 10% up to 40%), Step 5 is agreement on contents of the association rule and signed by the 12 core members (20%), Step 6 requires completion of registration to the government (20%), Step 7 needs to conduct opening of a bank account (20%).

by improving production capacity." Similarly, there is no data on the previous year's volume of purchased raw materials, so the average volume purchased from the first to the fourth week after the Pilot Project had started was set as the baseline for the evaluation of "KPI 6: The total volume of purchased raw materials increased by 10%."

According to the monitoring results on KPI 6, an average volume of purchased raw materials was almost the same as the baseline figure. There was only 1% increase. This shows that pilot project intervention left a successful result in cost reduction in raw materials, but it did not lead to an increase in production volume. It can be concluded that other marketing efforts are necessary to increase the sales volume.

"KPI 7: A total of 20% of their total oil extraction is carried out using a manual oil extractor" was achieved. The monitoring result showed that 60% of the total oil extraction was carried out with manual oil extractors. The target enterprise owners mentioned that use of manual oil extractor was easier than expected. It did not require much labour if they used it with a group. If anything, the oil extraction process became more efficient in cost and labour. The number of instances of outsourcing to commissioned millers and the overall production cost were reduced. Relationship among the core members of the association were strengthened because they operated manual oil extractors together.

Although KPI 7 was achieved, CSF 3 was not successful. It is analysed that there was no change in KPI 6 which influenced the production volume. If there is no change in sales volume, the volume of raw material purchase does not change either. Usage rate of manual oil extraction was high, but it affected the performance of cost reduction mainly. It did not create an increase in sales volume. Marketing efforts are necessary to increase sales and production volume.

(7) Lessons learnt and future roles of BDS

Financial record keeping became routine activities for all the target enterprises and they understood important figures for their business. Their interests in the figures related to business became stronger. Group purchasing and use of manual oil extractor brought positive outcomes which led to cost reduction. Even though production volume was not increased, it is fair to say that this case was a success due to the number of KGIs and KPIs achieved.

As for the role of the BDS, the Technology Incubation Centre (TIC) is able to provide paid guidance on management basics, including bookkeeping. A worksite for entrepreneurs is provided free of charge for a limited time, but as there is no prospective instructor who has experience in providing technical guidance (including business management), it is difficult to provide guidance that meets the needs of the current situation. As for the Business Support Centre (BSC), the definition and function of the BSC at the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) is not clear, and its purpose and utilities are not visible to relevant people. Therefore, SMEDAN cannot help but conclude that the BSC is only semi-prepared. The content of activities should be clarified, and efforts should be made to make effective use of various services.

FADAMA is engaged in activities targeting groundnut processing. It is active in some fields, including offering the free provision of equipment. However, on the other hand, its analysis of the current situation—including locating problems—falls short, and no guidance is provided regarding the selection/maintenance of equipment. Further, such equipment, as is already provided, is not being fully utilized. Given that this is an organization that reports to the Ministry of Agriculture, the extent to which cooperation should be provided for future programs remains to be examined.

6.2.2 Kontagora groundnut oil mechanical processor project

(1) Pilot project participants

Five mechanical oil processors participated in the pilot project. They were located in the city of Kontagora and are members of a cooperative society. All the owners of these businesses were men, the total number of employees ranged from three to ten, most of the oil-extracting machines was made in China or India, and each business used one to five machines.
Kontagora is a major groundnut-producing area, and, as is the case with traditional oil processors, it is a benefit for the mechanical processors here to be able to purchase raw materials at lower prices, compared to other areas in the peak season. However, as the supply of the groundnuts decreases during the off season, they process the groundnuts and cake purchased from suppliers in other states.
The mechanical processors usually close down their factories for a few months because the price of groundnuts hikes during the off season and the groundnut oil become more expensive than vegetable oil which is a competing product for groundnut oil. In 2011, four out of the five participants closed down their factories from March to July during the implementation period of the pilot project. Although the remaining one participant did not close down the factory, its operation rate decreased.

(2) Result of activities concerning management capacity

The decision as to when to purchase raw materials and spare parts is often made based not on past performance and data, but on experience and intuition. Improvement of the business management capacity starts with proper financial bookkeeping and a precise understanding of the financial situation of the business. Project Team provided a training session of bookkeeping to 20 mechanical processors and monitored the financial records of five processors selected from the participants of the training session. Although four processors closed down their factories from March to July and the operation rate of the remaining one decreased, all the participants of the pilot project continued bookkeeping during the operation period. The continuous bookkeeping made it possible for them to understand the financial standing of their businesses. However, they have not reached a level of analysing the financial data and taking actions to better management of their businesses.

(3) Result of activities concerning processing skills and the work environment

1) 5S training and monitoring
Project Team held a training session of 5S to the participants of the pilot project on December 18, 2010 to explain the idea of 5S and the method to introduce it with an official in charge of technical education in the TIC in Niger State as the lecturer. Based on the result of the training session, the lecturer carried out monitoring five times during the pilot project by using a 5S check sheet to evaluate the improvement of the participant's factory. Most of the target factories were closed down from March 2011 because of a hike in prices of raw material and groundnut oil during the off season. Although the frequency of monitoring and evaluation was not sufficient, the evaluation results improved each time

2) Introduction of filtering systems
There is a purification process after oil extraction. Impurities in the extracted oil are removed in this process. Most of factories usually keep the extracted oil in drums and leave them under the hot sun for five to ten hours until impurities settle down, while some factories have the system which uses canvas for filtration. These purification methods have many problems. For example, fine impurities cannot be removed by just leaving the drums still, and leaving the drums under the hot sun for several hours might cause deterioration of oil quality through oxidization.

To solve these problems, Project Team recommended the introduction of a small-scale purifying system using a filter for automobile oil. This was meant to have the participants understand the

necessity of quality improvement, and practise a recommendation of Project Team. On the other hand, many mechanical processors cannot afford to invest in the systems even though they understand the necessity.

(4) Progress of activities concerning price and marketing

Based on the information obtained from mechanical oil processors, procurement prices of spare parts are compared between local equipment manufacturers and importing firms. As shown in Table 6-11, locally manufactured spare parts are more expensive than the ones imported from China. However, the life time of the locally manufactured ones is about twice to three times as long as that of the imported ones. Decrease in machine failure makes it possible to reduce the expense for repair, and leads to improvement of the operating rate, and increase in total production.

Table 6-11 Comparison of spare part prices

	Imported from China	Locally manufactured
Quality	Steel used is often poor quality, and durability is low.	Locally available steel is used, and high durability can be expected.
Average operating life	2–3 months	6 months or longer
Price	Large parts: @ NGN 35,000 Medium-sized parts: @ NGN 15,000 Small parts: @ NGN 10,000 Total: NGN 60,000	One set of parts: NGN 110,000

Note: Parts quoted are one unit of gears for an oil extracting machine, consisting of large, medium, and small sizes.
Source: Project Team

When the participants receive a cost estimate of the filtering systems, they suggested a trial use of the locally manufactured spare parts to compare the durability to that of the parts imported from China. Project Team asked the manufacturers in Kaduna State, who prepared the cost estimate, if he could provide them with sample products. As the manufactures agreed to provide the sample products to them, Project Team held a meeting in Kontagora with the participants and the manufacturer. If participants were satisfied with the quality of locally manufactured parts, they would conclude a MOU with the manufacturer, and members of the cooperative society would purchase the spare parts from the manufacturer based on the MOU. However, as the manufacture was unable to obtain the material suitable for the spare parts during the implementation period of the pilot project, the sample parts were not provided to the participants.

(5) Accounting book analysis

All the five participants started recording an accounting book. However, from the fifth period, four participants who sustained the business, only one continued book keeping. The group did not required gross margin data by product, and the regular accounting book format was applied. The following are the features of the group identified by the accounting data:

- The average ratios of gross operating profit to sales for the four participants who sustained the business were 69%, -15%, 55% and 65%. Three out of the four participants' ratios stay in a narrow range. For the participants who kept the business for the entire period, the average ratio of gross operating profit to sales was 19%, which is lower than others. In the third, fourth, and

fifth period, the participants made a negative gross operating profit and the records during the period lower the average of the whole period.

- The average sales price for each period was NGN 314, NGN 440, NGN 531 and NGN 447. Because the prices were in a narrow range, the records are considered to be accurate. 10 to 30% of the sales were from commission milling, which affected the sales price. Since the unit of sales is different from the one used by the groundnut oil mechanical processor in Kano, no comparison of sales prices was made between the processors in Niger and those in Kano.
- The average procurement prices by participant were NGN 607, NGN 11,699, NGN 458, NGN 359 and NGN 327. One participant's data is too large, and must be an error. The gross margin ratio for the participant is derived to be -15% which must also be wrong. Due to the difference in purchase unit the purchase price of raw material in Niger and Kano is different.
- Expenses include salary and transportation costs. The expenses of the same business group in Kano included electricity and spare parts of machines. Because of the exclusion of electricity and spare parts costs, the ratio of expenses to the sales by participant are 2%, 3%, 3%, 2% and 5%, which are slightly lower than these of the participants in Kano. This indicates that the expenses records were relatively accurately recorded. The participant with 5% ratio is the one who continued the business till the end of the pilot project period. The high ratio of expenditures was caused by the sales decline from the third to ninth period and the slight salary payment decline in these periods. Thus it is fair to say that continuous business operation during lean periods result in high costs.
- The average of net operating profits per period for the four participants who sustained the business were NGN 280,000 (66% of the sales), NGN 47,000(18% of the sales), NGN 206,000 (52% of the sales) and NGN 272000 (63% of the sales). The data of one participant is invalid and to be taken out of consideration. The data of the other three participants is similar. The one participant who kept business running throughout the project period had an average of NGN 32,000 per period (14% of the sales), and recorded losses from the third to fifth period.

The results of the accounting record examination show the importance of decisions regarding off-season operation. One participant decided to continue oil production to maintain business relationships with buyers and employment. In this case, maximisation of annual profit should be achieved by minimising losses in the lean season and maximising profits during the peak season. However, to examine medium and long term customer and labour relationships, accounting data for three years must be obtained for comparisons.

(6) Achievement of indicators

Table 6-12 shows the Critical Success Factors (CSFs), Key Performance Indexes (KPIs), and Key Goal Indicators (KGIs) set up based on Business consultation targeting mechanical groundnut oil extraction processors. To evaluate achievement of each indicator, the items shown in Table 6-13 were monitored.

The items to be monitored for "CSF 1: Improve business management capacity" were keeping financial records by themselves and participation in follow-up meetings. Table 6-14 shows the monitoring results of each evaluation indicators. Four participants closed down their factories between Week 15 and 19 and the remaining one continued operation from Week 20. According to the monitoring results up to the fourth period (Week 13 to 16) when all the participants were operating, both KGI and KPI were achieved. All the participants were able to keep financial records until they closed down their factories, while some of them were unable to attend the follow-up meeting in several weeks. Therefore, it is fair to say that the business management capacity of the participants was improved because they were able to keep financial records and know their financial situation.

Table 6-12 Business strategies of mechanical groundnut oil extraction processors

No.	Critical Success Factors (CSFs)	Key Goal Indicators (KGIs)	Key Performance Indexes (KPIs)
1	Improve business management capacity.	• All the selected firms can keep financial records on a regular basis.	• All the selected firms participate in the follow-up group meetings. • 80% of all the firms can keep their financial records by themselves.
2	Increase profitability by reducing cost.	• The gross margin is increased by 10%.	• The time required for purification is reduced by 20%. • 70% of the 5S check sheet items are practiced.
3	Increase production volume by improving production capacity.	• Annual production volume is increased by 20%.	• The number of machine stoppages is reduced by 30%.

Source: Project Team

Table 6-13 Monitoring items

Indicator	Monitoring items
CSF 1: Improve business management capacity	
KGI 1: All the selected firms can keep financial records on a regular basis.	• Conditions of financial record keeping for each participant.
KPI 1: 80% of all the firms can keep their financial records by themselves.	• The number of participants who keep the financial records.
KPI 2: All the selected firms participate in the follow-up group meetings.	• The number of participants who attend the follow-up meetings.
CSF 2: Increase profitability by reducing cost	
KGI 2: The gross operating profit is increased by 10%.	• Baseline (average gross operating profit of the first to fourth week after commencement of the pilot project activities) • Average weekly gross operating profit for the participants.
KPI 3: The time required for purification is reduced by 20%.	• Time for purification before the commencement of the pilot project • Actual time required for purification
KPI 4: 70% of the 5S check sheet items are practiced.	• Scores of check sheet recorded in the monitoring tour
CSF 3: Increase production volume by improving production capacity	
KGI 3: Annual production volume is increased by 20%.	• Baseline (average production volume of the first to fourth week after commencement of the pilot project activities) • Average production volume for the participants in every week
KPI 5: The number of machine stoppages is reduced by 30%.	• Frequency of machine failure before commencement of the pilot project activities • Actual frequency of machine failure for target equipment for monitoring

Source: Project Team

Table 6-14 Monitoring results of evaluation indicators for CSF 1

	Week 1-4	Week 5-8	Week 9-12	Week 13-16	Week 17-20	Week 21-24	Week 25-28	Week 29-32	Week 33-36
KGI 1	100%	100%	100%	100%	100%	80%	20%	20%	20%
KPI 1	100%	100%	100%	100%	100%	80%	20%	20%	20%
KPI 2	95%	100%	95%	75%	35%	20%	20%	20%	20%

Note: One participant continued operation from Period 6 (Week 21-24).
Source: Project Team

Reduction of purification time and introduction of 5S were enhanced in the pilot project for "CSF 2: Increase profitability by reducing cost." Table 6-15 shows the monitoring results of each evaluation indicators. The previous year's situation was set as the baseline for the purification time in "KPI 3: The time required for purification is reduced by 20%." Each participant was notified in advance to record the time required for purification, and during the follow-up meeting, the time required for the purification of the groundnut oil that each participants produced during the week was confirmed and recorded. The activity to achieve KPI 3 was the introduction of a filtering system; however, it was not possible to evaluate the activity because the filtering system was not installed during the implementation period of the pilot project. As for "KPI 4: 70% of the 5S check sheet items are practiced," the items pointed out in the first monitoring tour were gradually improved and the target figure was achieved, while the frequency of the monitoring tours was not sufficient. Finally, as for achievement of "KGI 2: gross operating profit is increased by 10%," it was not possible to obtain the data to evaluate whether reduction of purification time and introduction of 5S contributed to increase in gross operating profit because the filtering system was not introduced during the implementation period of the pilot project and 5S monitoring was not implemented throughout the year. The average gross operating profit of the first to fourth week after commencement of the pilot project activities was set as the baseline for evaluating the gross operating profit in KGI 2. According to the bookkeeping records, the average gross operating profit per participant of the first to fourth week was NGN 61,430. Increase in the average gross operating profit was not achieved during the implementation period of the pilot project because the monitoring period was too short for the evaluation. In addition, as the average gross operating profit per participant for the whole period was NGN 28,630, it may be considered a factor that NGN 61,430 as the baseline was too high for evaluation of increase in gross operating profit in the off season.

Table 6-15 Monitoring results of evaluation indicators for CSF 2

	Week 1-4	Week 5-8	Week 9-12	Week 13-16	Week 17-20	Week 21-24	Week 25-28	Week 29-32	Week 33-36
KGI 2	-	2%	-88%	-74%	-111%	-	-	-	-
KPI 3	-	-	-	17%	27%	-	-	-	-
KPI 4	-	-	57%	72%	77%	-	75%	-	-

Note: One participant continued operation from Period 6 (Week 21-24).
Source: Project Team

Introduction of durable spare parts was promoted in "CSF 3: Increase production volume by improving production capacity" in order to reduce frequency of machine failure. Table 6-16 shows the monitoring results of each evaluation indicator. The previous year's situation heard from each participant was set as the baseline for the number of machine stoppages caused by breakdown in "KPI 5: The number of machine stoppages is reduced by 30%." It was expected that change in conditions of machine operation through introduction of durable spare parts would be checked every week and the monitored records would be compared to the baseline. However, the introduction of durable spare

parts was not realised during the implementation period of the pilot project and it was not possible to evaluate the effectiveness of the activity. The average production volume in four weeks after commencement of the pilot project activities was set as the baseline of evaluation for "KGI 3: Annual production volume is increased by 20%," since no data on the previous year's production volume was available. The production volume was recorded every week to determine changes. However, sufficient production data to evaluate the results was not obtained because the data recording was started in Week 12 and four participants closed down their factories by Week 19. As a result, it was not possible to get the data to evaluate whether or not reduction of machine stoppage contributed to increase in production and thus the achievement of KGI 3. Although the production capacity depends on the scale of business, the average weekly production volume is about 250 litres for the processors operating one to two processing machines, and 1,500 litres for the processor operating four machines.

Table 6-16 Monitoring results of evaluation indicators for CSF 3

	Week 1-4	Week 5-8	Week 9-12	Week 13-16	Week 17-20	Week 21-24	Week 25-28	Week 29-32	Week 33-36
KGI 3	-	-	-	-28%	35%	-	-	-	-
KPI 5	-	-	-	42%	51%	0%	25%	25%	25%

Note: One participant continued operation from Period 6 (Week 21-24).
Source: Project Team

(7) Lessons learnt and future roles of BDS

The following four points are identified as lessons learnt from pilot project implementation.

1) Awareness of quality management and sanitation
It was identified through the introduction of 5S that the participants of the pilot project were not aware of importance of quality management and sanitation. To improve this situation, it is necessary to raise their awareness of food sanitation (how to handle the raw materials, intermediate products, and final products), and to address quality control (constant mixing ratio of groundnuts and cake, and improvement of filtering process) (for details of 5S and sanitary management see Annex 9).

2) Attitude to investment
Currently, problems of spare parts cause frequent machine failure. The reasons for the problems are not only that machine suppliers do not provide after-sales services such as instruction on operation and maintenance, but that mechanical processors select machines and spare parts by low prices and do not care about investment efficiency. Procurement of durable spare parts and proper operation of processing machines improve the operation ratio of factories, and lead to raising investment efficiency.

3) Marketing
The mechanical processors in Kontagora have not developed strategy on how to sell their products because their customers come to the factories to buy the groundnut oil. Consumers in Kontagora select cooking oil for the price, and buy vegetable oil during the period when the price of groundnut oil is higher than vegetable oil. To stabilise operation of their factories without closing-down, market development is required to secure more stable distribution channels of their products. There are consumers in urban areas, who select cooking oil for taste, aroma and ingredients. Differentiating their products from other vegetable oil will enable the mechanical processors to extend their market

4) Cooperative actions
Although the participants of the pilot project are the members of a cooperative society, they do not perform substantive cooperative actions. Improvement measures which can be done by one enterprise

are very limited. Enhancement of the cooperative actions can bring benefits to them, such as cost reduction by group purchase of raw materials and spare parts, cost sharing for requesting BDS, and addressing big orders. In order to realise such benefits, assistance to the cooperative actions such as development of rules for group purchase and collection and management of cooperative dues is required as BDS. For effective operation of cooperative societies, it should be helpful for BDSPs to summarise and disseminate the past successes and failures in operation of cooperative societies, financial management, group purchase of raw materials, group production and sale, and profit sharing.

6.3 Yam

6.3.1 Paikoro yam trader project

(1) Pilot project participants

This Pilot Project was carried out targeting Paiko District, Paikoro LGA. To carry out a fresh yam tuber trading business in the Paiko market, membership in the Paiko Yam Traders Cooperative Society is a prerequisite. Furthermore, all the participants in the Pilot Project are men, and their business operation depends on their families and relatives as an important labour force. In addition, for loading and unloading fresh yam tubers when they are being carried in and out of the market, labourers stationed in the market are hired when necessary. Traders do not have retail shops or vehicles from which yam tubers are bought and sold, but about 50% of the members individually have a hut in which to store them. The cooperative society collects a membership due of NGN 200 from the members every week.

As buyers come to the Paiko market to buy fresh yam tubers, traders do not go outside the market to sell them. Fresh yam tubers are traded by the “heap” (regardless of the sizes of fresh yam tubers, one heap consists of 100 fresh yam tubers. In rare cases, one heap can equal 50 fresh yam tubers). The annual trading volume per trader is 700 to 1,000 heaps. The harvest of yam tubers starts around August, when the trading volume increases to 20 to 25 heaps per month. After November, it increases to 50 to150 heaps per month. Depending on whether or not storage facilities are used (regardless of being owned or rented), the trading period varies greatly. If storage facilities are not used, fresh yam tubers cannot be stored for a long period. January is the busiest month for fresh yam tuber trading, and the yam traders without warehouse close the trading business almost entirely in the beginning of March.

Traders who do not own a storage facility have to rent one to store fresh yam tubers, paying rental fees to storage owners; however, the rental fee for a one-heap space is as high as NGN 50 per day. Further, the yam market opens on Thursday and Friday every week. If fresh yam tubers remain unsold on Friday, as they are not allowed to be left outdoors in the market precinct, the trader has to pay storage usage fees for six days until next Thursday (i.e., NGN 300 per heap). Therefore, in order to prevent the unnecessary sales of fresh yam tubers at discount prices, low-rent storage facilities are necessary. The use or non-use of storage facilities seems to influence not only long-term storage but also weekly and biweekly transactions. Compared with traders with storage facilities, the daily trading volume of those who do not own such facilities is smaller, and is about 70 to 80% of the ones with storages as they do not want fresh tubers left unsold. It is estimated that fresh yam tuber traders with storage facilities deal with about 70 to 75% of the total trading volume of fresh yam tubers in the Paiko market.

In January 2011, the cooperative members accused the executive members for embezzlement of cooperative dues. They closed the cooperative office, demanded the executive members to admit the fact of embezzlement and the pay the money back. Therefore, the cooperative society did not work until the end of June 2011 and the pilot project activities for the cooperative society were not implemented.

(2) Progress of activities concerning management capacity

Expense items related to fresh yam tuber trading are not as numerous as those for other kinds of produce, but very few traders keep financial records. In addition, traders do not practice stock management. Thus the amount of damage caused by decay and rats during storage is ambiguous. By keeping records on daily trading, yam traders will be able to grasp their own managerial situation using recorded figures. Therefore, targeting fresh yam tuber traders, training on financial accounting was being carried out as a part of the Pilot Project in order to improve management capacity, and four traders were selected for the target group of monitoring. The target traders for monitoring were able to continue bookkeeping during the implementation period of the pilot project. The continuous bookkeeping made it possible for them to understand the financial standing of their businesses. However, they did not reach a level of analysing the financial data and taking action to improve management of their businesses.

(3) Progress of activities concerning processing skills and the work environment

Fresh yam tubers are said to become spoiled both in quality and quantity when kept in storage for a long period. The major reason for this is the lack of proper and modernised storage facilities. Specifically, problems include directly placing the produce on the ground, damage caused by rats, poor ventilation, exposure to rain, and lack of measures against bacterial infection. Tackling these problems will lead to a decrease in losses and, in turn, to an improvement in profits and an increase in trading volume. Upon consultation with fresh yam tuber traders, Project Team has decided to install shelves in the existing storage facilities (for details of the yam shelves see Annex 13).

Although wastage is said to be 20% of the trading volume, not all of the wastage is dumped. Thus, to be precise, instead of “wastage” the word “damage quantity” better describes the situation. Undamaged parts of yam tubers can be sold as seed tubers, or are crushed, dried, and processed into flour. A total of 90% of the damage quantity comes from fresh yam tubers stored for one to six months, and the damage occurs during the period from late January through July. Therefore, the volume completely scrapped is 20% of the damage quantity (details on the reuse of damaged yams are shown below); while the remaining 80%, which are often foul in appearance, are traded in the 12 to 20% price range compared with normal prices (the following provisional calculation sets it at 15%). Many of the damages occur when fresh yam tubers are being stored. The wastage of fresh yam tubers will be reduced by using yam storage shelves, and we think it is reasonable to estimate the reduction to be 5% of the damage quantity.

Assuming 5% damage reduction by introduction of fresh yam tuber storage shelves, 4.6–6.9 heaps of wastage can be prevented annually. Fresh yam tuber price in January 2010 is NGN 40,000 per heap so the reduced wastage value is estimated in the range of NGN 184,000 to NGN 276,000 per year. Since the actual construction cost of a yam tuber storage shelf was about NGN 24,000, the cost is far less than reduced value of the wastage.

However, during the implementation period of the pilot project, it was revealed that the fresh yam tuber traders in the Paiko market do not store the fresh yam tubers for a long period because they generally buy and sell tubers simultaneously, and keep the tubers over a period up to about one week only. Therefore, although one participant installed one unit of the storage shelf, the trader did not use the shelf for long-term storage of the fresh yam tubers. As a result, it was not possible to compare the number of spoiled tubers from the heaps kept on the shelf with that from the heaps placed on the ground.

Table 6-17 Harvest season, transaction period, and price by yam species

Varieties (Ranking of hot products)	Data item	Month / Size	Harvest season (peak season of harvesting) / Transaction status at market (peak season of transaction)											
			Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
Lagos	Harvest													
	Transaction													
②	Price	Large				20,000		30,000 – 35,000			50,000 – 60,000		30,000–35,000	
		Medium				15,000		8,000			12,000 – 40,000		20,000	
		Small				6,000		4,000 – 6,000			8,000– 15,000		10,000–15,000	
Onitsha	Harvest													
	Transaction													
①	Price	Large				25,000		25,000 – 50,000				40,000	60,000 – 80,000	
		Medium				20,000		15,000				30,000	35,000 – 60000	
		Small				10,000		4,000 – 6,000				9,000	25,000 – 30000	
Angbaje	Harvest													
	Transaction													
	Price	Large	20,000			20,000		12,000				40,000	40,000	
		Medium	10,000			15,000		10,000				30,000	30,000	
		Small	5,000			10,000		8,000				20,000	20,000	
Paper	Harvest													
	Transaction													
⑤	Price	Large				20,000		30,000				45,000	40,000	
		Medium				15,000		20,000				30,000	30,000	
		Small				10,000		16,000				15,000	25,000	
Ankwosi	Harvest													
	Transaction													
③	Price	Large				30,000 – 40,000		60,000				100,000	70,000 – 100,000	
		Medium				20,000 – 30,000		40,000				80,000	45,000 – 80,000	
		Small				10,000 – 20,000		20,000				50,000	20,000 – 50,000	
Mana	Harvest													
	Transaction													
⑦	Price	Large	20,000	6,000		8,000		10,000					25,000	
		Medium		4,000		6,000							15,000	
		Small		3,000		5,000							10,000	
Laushi	Harvest													
	Transaction													
④	Price	Large				25,000 – 30,000		35,000				70,000	60,000 – 70,000	
		Medium				20,000		25,000				50,000	40,000 – 50,000	
		Small				10,000 – 15,000		20,000				30,000	25,000 – 30,000	
Army	Harvest													
	Transaction													
	Price	Large				9,000		20,000				30,000	40,000	
		Medium						9,000				20,000	30,000	
		Small						5,000				10,000	25,000	
Suba	Harvest													
	Transaction													
⑥	Price	Large				10,000		25,000					20,000	
		Medium				8,000		10,000					15,000	
		Small				6,000		7,000					10,000	
Lemu	Harvest													
	Transaction													
	Price	Large				20,000		15,000 – 20000				25,000	40,000	
		Medium				15,000		10000 – 12,000				15,000	25,000	
		Small				12,000		4000 – 7,000				8,000	15,000	
Kpakogi	Harvest													
	Transaction													
	Price	Large				12,000		17,000					20,000	
		Medium				7,000		10,000					15,000	
		Small				5,000		8,000					10,000	
Shemuakpa	Harvest													
	Transaction													
	Price	Large	5,000			10,000		14,000						
		Medium				6,000		10,000						
		Small				3,500		8,000						
Coach	Harvest													
	Transaction													
	Price	Large				1,7000 – 20,000		30,000					30,000	
		Medium				6,000 – 11,000		20,000					20,000	
		Small				8,000		15,000					15,000	

Source: Project Team

According to the interviews in the Paiko market and with farmers working in the surrounding area, yam farmers and traders from other states store the fresh yam tubers for a long period, and suffer more losses than the target group of the pilot project.

(4) Progress of activities concerning price and marketing

As shown in Table 6-17, fresh yam tuber prices vary according to species and seasons. In the peak season, when trading volume increases, prices become stable, and one heap is worth NGN 25,000 to 40,000, though prices differ depending on varieties and the size of fresh yam tubers. In the off season, especially during the season when new seeds are planted (March to May), fresh yam tubers lose moisture content, become sweeter, and are traded at higher prices, as people feel a shortage of supply. At this time, one heap is traded at NGN 50,000 to 80,000.

In terms of the size of fresh yam tubers, larger ones come first, and then smaller ones gradually come into circulation. In mid-January and later, tubers with less moisture content come into the market, while ones with signs of spoilage or sprouting also increase. There also seems to be a time difference of one to two months between peak harvest and peak transactions in the Paiko market. It is assumed that farmers store fresh yam tubers after harvesting before selling them to buyers. It is said that in the Paiko market, fresh yam traders with storage facilities begin the long-term storage of fresh yam tubers in early January. However, it seems that traders are operating their trade to minimise excess stock, and whenever receiving business inquiries they sell yam as quickly as possible.

The Paiko LGA is one of the most active yam production and trading areas. 70% of all fresh yam tubers produced in Niger State are sold to other states, such as Sokoto, Oyo, Lagos, Abuja, Kano, and Anambra, indicating a strong connection with Nigeria's domestic market. At the same time, as traders from outside Nigeria also come to Niger State to buy fresh yam tubers, it may be possible for traders in this state to do business in the international market. In some other fresh yam tuber-producing states, yam traders are now moving into the international market, including the U.S. and Europe; however, yam traders in the Paiko market in Niger State are not yet directly connected to the global market because of lack of information.

Traders participating in the Pilot Project are not active in developing new markets. Although they were interested in exporting yam to other countries, they were not able to lack of information and business connection. Therefore, in collaboration with the Niger State Commodity and Export promotion Agency (NSCEPA), Project Team planned to hold workshops for the export promotion of fresh yam tubers and to support exporter registration. However, such as export promotion workshops were not held because the cooperative society suspended their activities due to embezzlement of the cooperative fund. Although the cooperative office was opened in the beginning of July 2011, the activities for export promotion were not implemented because Project Team concluded that they were not ready for implementation of the pilot project activities.

(5) Accounting book analysis

The four participants kept accounting record from the first to ninth period. Three participants among four have almost the same size of sales ranging from NGN 333,000 per period to NGN 365,000 per period, but only one has a comparatively larger business of NGN 2,555,000 per period. Similar to the shea butter traditional processors, the first period inventory and each period's stock changes data are available. The differences among the periods were fairly small because the material purchase and consumption amounts are about the same. The characteristics of the business type according to the accounting data are following:

- The average ratios of gross operating profit to sales for the entire period for participants are 9%, 9%, 10% and 10% which show a very small variance, and scale merit seems not to be obtained

for yam trading. However, per period ratios of gross operating profit to sale range from 1% to 21%.

- Analysis of the individual sales records showed that the sales values were affected by season. From the first to fourth period the sales volume stayed the same, but the sales price gradually increased form the NGN 4,000 to NGN 20,000 range to the NGN 10,000 to NGN 20,000 range, and sales increased slightly. For the fifth to seventh period, the sales volume decreased gradually, although the sales prices were increased swiftly from the range of NGN 10,000 to that of NGN 25,000 range to NGN 20,000 to NGN 25,000, and sales increased. From the eighth to ninth period, the sales volume decreased sharply, but the sales price raised NGN 25,000 to NGN 30,000 range (occasionally NGN 50,000 or NGN 60,000) preventing a sharp decline of sales.
- Stock of yam was recorded. According to the accounting data, the whole purchase sold during the period, and thus the amount of stock hardly changed. The record shows no stock discarded by the damage in the storage.
- No expenses items were recorded. There must have been some business expenses to record.

This is a type of business greatly affected by seasonal changes. Both the sales amount and the purchase amount vary widely, thus accurate book keeping of each trading is essential to prevent failure of setting prices. Also, the enterprise owner needs to conduct stock inventory in order to match the stock in the book and the actual stock.

(6) Achievement of indicators

Table 6-18 shows the Critical Success Factors (CSFs), Key Performance Indexes (KPIs), and Key Goal Indicators (KGIs) set up based on Business consultation targeting fresh yam tuber traders. In order to evaluate achievement of each indicator, the items shown in Table 6-19 were monitored.

Table 6-18 Business strategy of yam tuber traders

No.	Critical Success Factors (CSFs)	Key Goal Indicators (KGIs)	Key Performance Indexes (KPIs)
1	Improve business management capacity.	• Continuous record-keeping: 100%	• Attendance at follow-up meetings: 100%. • Self-record keeping: 80%.
2	Improve storage facilities.	• Number of spoiled tubers: 5% decrease	• Periodical checks of facility conditions and inventory: 80%. • 5% of yam tubers are not set directly on the ground.
3	Establish a distribution channel for fresh yam tubers to reach the international market (exports).	• Customers in foreign countries: 1 retailer	• Required documents for registration: 100%. • Required documents for export: 100%.

Source: Project Team

Evaluation indicators for “CSF 1: Improve business management capacity” are set as “Attendance at follow-up meetings” and “Self record-keeping.” Table 6-20 shows the monitoring results of each evaluation indicators. All the participants were able to continue keeping financial records during the implementation period of the pilot project, while some of them were not able to attend the follow-up meeting in several weeks. Therefore, it can be concluded that the business management capacity of the

participants has been improved in terms of that they can keep financial records and know about their financial situation.

Table 6-19 Items to be monitored

Indicators	Monitoring items
CSF 1: Improve business management capacity.	
KGI 1: Continuous record-keeping: 100%.	• Record-keeping situation at each trader
KPI 1: Attendance at follow-up meetings: 100%.	• Number of traders that participated in the meeting
KPI 2: Self record-keeping: 80%.	• Number of transactions and number of items to record
CSF 2: Improve storage facilities.	
KGI 2: Number of spoiled tubers: 5% decrease.	• Baseline (average gross operating profit of four weeks after the Pilot Project started) • Weekly average gross operating profit of traders
KPI 3: Periodical checks of facility conditions and inventory: 80%.	• Number of traders carrying out periodical checks
KPI 4: 5% of yam tubers are not set directly on the ground.	• Total volume of yam tubers purchased • Number of yam tubers stored on a shelf • (Unit: 1 heap)
CSF 3: Establish a distribution channel for fresh yam tubers to reach the international market (exports).	
KGI 3: Customers in foreign countries: 1 retailer.	• Baseline (average production volume of four weeks after the Pilot Project started) • Weekly average production volume of traders
KPI 5: Required documents for registration: 100%.	• Five steps to registration (1: preparing workshops; 2: implementing workshops; 3: preparing registration documents; 4: exporter registration; 5: opening a bank account)
KPI 6: Required documents for export: 100%.	• Six steps to application (1: preparing workshops; 2: implementing workshops; 3: marketing to buyers; 4: sales agreement; 5: preparing application documents; 6: export procedure)

Source: Project Team

Table 6-20 Monitoring results of evaluation indicators for CSF 1

	Week 1-4	Week 5-8	Week 9-12	Week 13-16	Week 17-20	Week 21-24	Week 25-28	Week 29-32	Week 33-36
KGI 1	100%	100%	100%	100%	100%	100%	100%	100%	100%
KPI 1	100%	94%	88%	100%	88%	100%	100%	100%	100%
KPI 2	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: One participant continued operation from Period 6 (Week 21-24).
Source: Project Team

Evaluation indicators for "CSF 2: Improve storage facilities" were expected to be monitored after finding out the commencing time of the long-term storage because the interview survey result indicated that the fresh yam tuber traders usually started the long-term storage in January. However,

only one trader installed the storage shelf, and the trader did not keep the fresh yam tubers for a long period in reality. Therefore, it was not possible to periodically check the inventory, and to compare the number of spoiled tubers from the heaps kept on the shelf with that from the heaps placed on the ground. This means that improvement of storage facilities was not achieved.

It had been planned to hold workshops on export promotion of yams and promote exporter registration as a cooperative activity for evaluation of "CSF 3: Establish a distribution channel for fresh yam tubers to reach the international market (exports)." However, the activities were not able to be carried out because the cooperative activities were suspended due to embezzlement of the cooperative fund in the preparatory stage. This means that establishment of distribution channels to the international market were not established.

(7) Lessons learnt and future roles of BDS

The following three points can be raised as lessons learnt from pilot project implementation.

1) Cooperative fund management

The cooperative society collects NGN 200 per member every week as a membership due and has a membership of 200 in the Paiko market. The collected dues are managed in a bank account. However, only the chairperson has an access to the bank account and he does not keep the financial records. As a result, the cooperative dues are not used for business improvement of the members, and poor management caused the embezzlement. The same trouble with cooperative fund management is likely to happen in other cooperative societies. The regional office of the State Ministry of Investment, Commerce and Cooperatives should give advice to cooperative societies on how to manage the cooperative fund when applicants come to register. The regional office should also teach them how to utilise the fund not only for expenses of managing the cooperative society, but also for establishment of shared facilities and a low-interest loan.

2) Compliance with written agreement

When one participant installed the yam shelf, he used the money borrowed from Project Team. The shelf was installed in December 2010, and the repayment to Project Team was scheduled in January 2011. However, the trader did not fulfil his obligation. As a result of discussion with the chairperson, it was decided that the cooperative society would clear the obligation. Project Team provided instructions of payment by instalment, regarding the repayment as training for repayment of loan from a financial institution. The cooperative society failed to repay the money during the implementation period of the pilot project because the cooperative activities were suspended and the society did not establish a schedule of repayment. As the fresh yam tubers were traded in verbal transaction and cash payment in the Paiko market, the cooperative members were not familiar with transaction in writing. As for the repayment of the borrowed money, they did not understand the importance of the documents for commercial transactions even though they exchanged a promissory note and memorandum. Loan from financial institutions and financial assistance from the government organisations are also on a written transaction basis. Those organisations are also held responsible for appraisal of the loan or assistance if embezzlement or breach of agreement occurs. The problem with the cooperative society could be an obstacle for microenterprises to have an access to loans from formal financial institutions. Therefore, it is necessary to teach the cooperative members that the activities should be recorded to monitor the financial situation of the business, and that compliance with the transaction contract is mandatory.

3) Capacity development of BDSPs

There are BDSPs in Minna, such as FUT, TIC, BSC and NACCIMA. Although MSMEs can use the BDSs which those organisations provide on technology and business management, access to the BDSPs is very limited in rural areas. Regional offices of the State Ministry of Investment, Commerce and Cooperatives and extension workers of ADP under the State Ministry of Agriculture who are

providing community-based services should play the role of a BDSP, or a facilitator to liaise the enterprises with the BDSPs in Minna or other states. However, the capacity of those officials is not enough to play the roles at the moment. Cooperative societies which the state government promotes to formulate mainly function as body to receive assistance from the government, rarely practise cooperative actions for business improvement, and have a problem on modality of organisational management. To provide the services mentioned above, it is necessary to develop and implement the plans on how the existing support systems of state government, including Niger State Commodity and Export Promotion Agency, can be utilised for provision of the BDSs and how the government officials develop their capacity. For teaching cooperative members proper operation of cooperative societies and provision of BDSs, it will be helpful to summarise the previous successes and failures on operation of cooperative societies, financial management, group buying of raw materials, group production and sale, profit sharing, and so on.

CHAPTER 7. Hypotheses examined by pilot projects

The established hypotheses are examined based on results obtained through pilot project implementation, baseline-survey, and value chain analysis. The results are used to analyse state-wide economy and structures of value chains and clusters of the selected products. Results of business consultations of selected business types and enterprises, their responses to BDS provision, and collected financial information were also used to examine the hypotheses. The hypotheses and summary of their examination are presented in Table 7-1. The results should be useful for the establishment of BDS objectives, and monitoring and evaluation of cost performance of BDS delivery.

Table 7-1 Results of hypothesis examination

Area	Hypotheses	Summary of hypothesis examination
1. Cost of government services and economic growth	**Hypothesis 1-1:** Increase in added value (GDP) generated by a value chain of a target product is greater than the cost of services provided by SMEDAN (economic efficiency exists for services). **Hypothesis 1-2:** Increase in tax revenues based on added value (GDP) generated by a value chain of a target product is greater than the cost of services provided by SMEDAN (financial efficiency exists for services)	**Results obtained during pilot project period:** During nine months of pilot project period, increase in value-added of enterprises received BDS was not observed. It was confirmed that value-added produced by target value chains are not larger than the cost of BDS provision. Therefore, for the pilot project period, economic and financial efficiency of BDS are low, and hypothesis 1-1 and 1-2 are rejected. **Hypothesis testing by simulation for rice in Kano State:** It was also examined whether the hypotheses would be proved in the future. For rice products in Kano State, the hypothesis 1-1 of economic efficiency would be supported if BDS of 100 million naira was provided to rice millers in Kano State for one year to produce value-added of 270 million naira. Assuming the tax rate is 15%, 100 million naira of public investment would be collected within two years to support the hypothesis 1-2 of financial efficiency. **Hypothesis testing by simulation for shea product in Niger State:** As for future perspective on traditional shea products in Kacha area of Niger State where BDS was provided under the pilot project, the hypothesis 1-1 is expected to be supported with the estimate of 24,000 naira of monthly cost of BDS provision and 40,000 naira of monthly value-added. On the other hand, traditional shea butter producers belong to informal sector do not pay tax, and public investment in BDS for shea butter processers would not be recovered. Therefore, the hypothesis 1-2 would not be supported. If BDS is provided to all traditional shea butter processors in the state, target enterprises would be a very large number of micro enterprises scattered all over the state to make the cost of BDS provision significantly high. Based on the conditions above, neither the hypothesis 1-1 nor the hypothesis 1-2 is likely to be supported.

Table 7 1 Results of hypothesis examination (continued)

Area	Hypotheses	Summary of hypothesis examination
2. Profitability and employment of MSMEs	**Hypothesis 2-1:** MSMEs improve profitability (improved financial efficiency of businesses). **Hypothesis 2-2:** MSMEs increase the number of employees.	**Financial aspect of businesses:** From profitability perspective, some types of business showed potential for profit increase by cost reduction, while some others kept books continuously to be able to analyse profitability of their businesses. However, there was no type of business that presented clear increase in profit as a result of BDS. Judging from these findings; the hypothesis 2-1 was not supported during the pilot project period. On the other hand, such capacity development of enterprises and the presence of fabricators marketing improved equipment on a commercial basis suggest that the hypothesis 2-1 has a high potential to be confirmed in the future if BDS is continuously provided. **Employment aspect of businesses:** From employment perspective, no information was confirmed during the pilot project period to demonstrate the relationship between BDS provision and increase in the number of employees. Therefore, the hypothesis 2-2 was not supported. On the other hand, some types of business showed a tendency to increase profit and expand scale of business. If BDS is continuously provided to expand businesses, employment would increase in an economy as a whole. Therefore, the hypothesis 2-2 has a good chance to be proved if BDS provision continues.
3. Poverty reduction	**Hypothesis 3-1:** Increase in added value generated by micro enterprises per unit BDS cost is greater than that generated by small and medium enterprises.	**Possibility of hypothesis testing:** The hypothesis 3-1 could not be examined due to two reasons: financial information collected during the pilot project period was not accurate enough to make analysis for this hypothesis; and clear increase in value-added was not observed. **Cost performance aspect of BDS provision:** In relation to examination of this hypothesis, cost performance of BDS provision was analysed. Micro-enterprises tend to have lower level of education, their management capacity tends to be small, and many of them are household industries that do not wish to expand scale of business. The result of analysis shows that the cost of BDS provision to micro-sized enterprises per a unit increase on value-added is higher than the cost of BDS provision to small and medium enterprises. Therefore, from the view of BDS cost performance, BDS provision should focus on small and medium enterprises. It would be a policy issue to decide how much resources should be allocated to support micro-enterprises.
4. Entrepreneurship	**Hypothesis 4-1:** MSMEs assisted by SMEDAN improve entrepreneurship.	**Observations regarding entrepreneurship criteria:** Entrepreneurship was monitored through implementation of the pilot project. As a result, enterprises improved entrepreneurship by BDS provision, and the hypothesis 4-1 was proved. Entrepreneurship can be examined by observing practices of enterprises such as continuation of bookkeeping. Many enterprises adopted bookkeeping practice with support of BDS during the pilot project period. Provision of BDS also helped enterprises improve entrepreneurship in other ways such as continuing 5S practice, filing an application for a loan, and attempting to introduce machines.

Source: Project Team

7.1 Cost of government services and economic growth

To examine impact of pilot project implementation from the point of view of the relationship between cost of government services and economic growth the two hypotheses are established:

Hypothesis 1-1: Increase in added value (GDP) generated by a target value chain of a target product is greater than the cost of services provided by SMEDAN (economic efficiency exists for services).

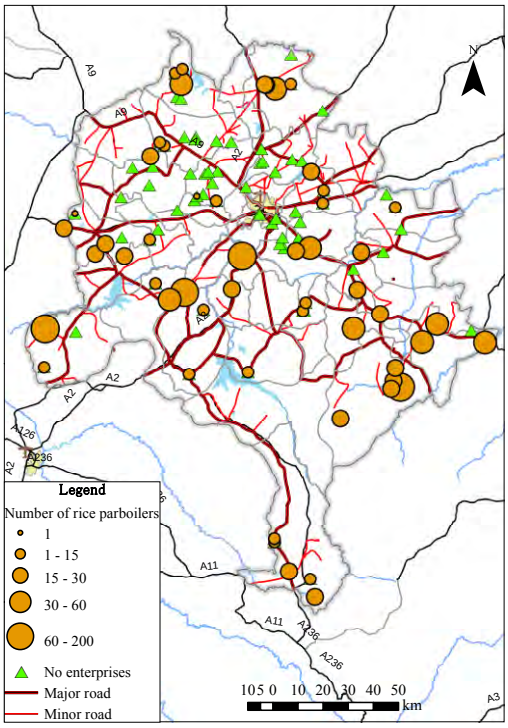
Hypothesis 1-2: Increase in tax revenues based on added value (GDP) generated by a target value chain of a target product is greater than the cost of services provided by SMEDAN (financial efficiency exists for services)

7.1.1 Example of analysis on rice millers in Kano State

Target products and business types for BDS delivery must have high potential to contribute GDP growth and generate other economic impacts as a result of the delivery. In the following example the business types in the rice value chain in Kano State were selected to examine the above hypotheses with necessary assumptions.

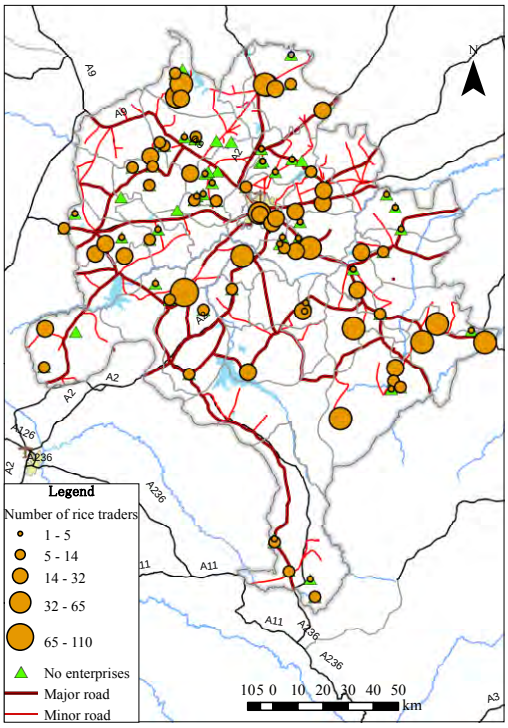
(1) Selection of business type for examination

Table 3-3 shows an overview of business types involving rice value chain in Kano. Approximately 68,000 parboilers, 4,200 millers, and 65,000 traders work in Kano State. Parboilers and traders reside all over the state (Figure 7-1 and Figure 7-2) while millers are located near main roads that are extended to the west, south, and east from the city centre (Figure 7-3).



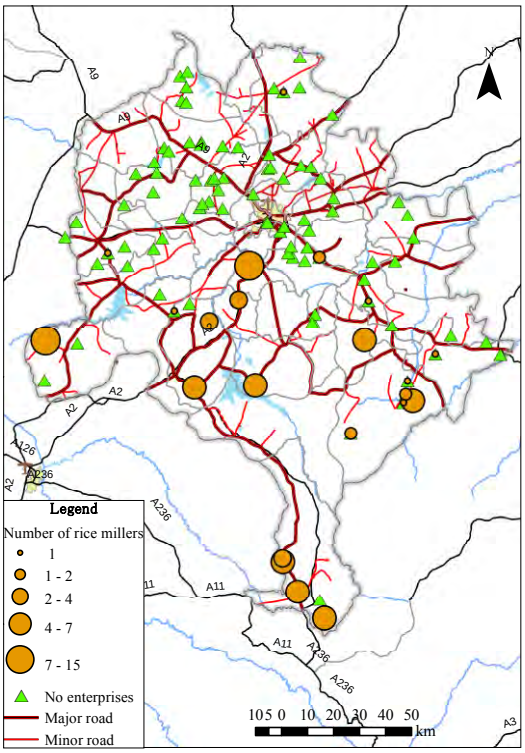
Source: Project Team

Figure 7-1 Distribution of rice parboilers in Kano State



Source: Project Team

Figure 7-2 Distribution of rice trader in Kano State



Source: Project Team

Figure 7-3 Distribution of rice miller in Kano State

Within business types under the rice value chain the rice millers has the smallest number of enterprises, and their clusters are concentrated in the specific areas of Kano State. The flows of rice also converge at the clusters. Due to these characteristics of rice millers BDSs targeted to them can be implemented easily and would yield a large impact across the value chain, and thus the rice miller is selected for verification of the hypotheses. The total number of parboilers and rice traders is 32 times larger than that of rice millers and the parboilers and traders are geographically dispersed, it is obvious that the cost of BDS delivery to these clients will be too large for the government to afford. It is expected that concentration of BDS provision to the rice millers will likely yield positive impacts on upstream parboiling businesses. At the same time downstream trading businesses should also be positively affected by the increased production and quality of products as a result of BDS provision to the millers. It is inferred from the data collected through the pilot projects that selection of, and concentration of BDS delivery to high potential business types in a selected product value chain are necessary to increase economic impacts of public services.

(2) Establishment of assumptions regarding cost of BDS delivery and opportunity cost

For examination of hypotheses the following assumptions regarding BDS delivery costs are established. Monthly cost of BDS service provision per group of 10 enterprises is NGN 51,040, which is NGN 612,480 in total per year. Staff providing BDS should have basic business management knowledge in the areas of accounting, marketing, processing, and technology used by enterprises in the target value chain.

Table 7-2 Cost of BDS provision[17]

Item	Amount	Remarks
Human personnel	NGN 50,000	Monthly salary. Junior level of SMEDAN or KMCICT staff. A staff is responsible for one group of 10 enterprises for BDS provision.
Transportation	NGN 1,040	Cost of gasoline. 60km/time, NGN 65/L, 15L/km. 4 visits to 10 enterprises as a group/month.

Source: Project Team

Assumptions regarding opportunity costs which incur with the engagement of main businesses concerned are established in the following manner. Opportunity costs of parboilers and traditional groundnut oil processors, who are categorized as micro enterprises in the informal sector, are assumed to be zero since rate of unemployment in rural areas is high. Different from micro enterprises, small and medium enterprises may have second businesses. Therefore, a certain level of opportunity costs can be incurred. If the period of engagement in the main business with BDS provision becomes longer than that in the second business due to increased profit, it is reasonable to assume that the overall increase in added value obtained after subtracting opportunity cost is positive. Most of the mechanical groundnut oil processors, whose works have seasonality in business operations, have second business which compensates for the main business management. Mechanical groundnut oil processors stabilize their business management by allocating profits from the second business. In this type of business, opportunity costs could be assumed as zero as long as the period of groundnut oil production which is subject of BDS provision is not overlapping with the period of the second business.

On the other hand, rice, leather, and groundnut oil traders at the downstream of the value chain show stable business operations and only few have second businesses. Therefore, their opportunity costs generated by the longer period of engagement in the main businesses are assumed to be zero.

(3) Results of examination of hypotheses

Examinations of "Hypothesis 1-1: Increase in added value (GDP) generated by a target value chain of a target product is greater than the cost of services provided by SMEDAN (economic efficiency exists for services)" and "Hypothesis 1-2: Increase in tax revenues based on added value (GDP) generated by a target value chain of a target product is greater than the cost of services provided by SMEDAN (financial efficiency exists for services)" for the period of the pilot project implementation and future period based on simulations were conducted. Results of the examinations are reported in the following.

1) Results hypothesis examination for pilot project period

During the nine-month-pilot-project period no value added was clearly observed in accounting book of the rice millers, and therefore it is clear that the costs of BDS delivery is larger than an increase in value added generated by the rice millers. This result indicates that for the hypothesis 1-1 economic efficiency of BDS is low, and for the hypothesis 1-2 financial efficiency of BDS delivery is also low.

2) Results of hypothesis examination for the future period by simulations

The estimated state-wide added value of millers is NGN 5,470 million[18]. If a miller increases 5% of added value through BDS provision (opportunity cost is assumed as zero), the impact generated to the

[17] The local staff hired by Project Team for monitoring of pilot project activities was senior level with high expertise (Monthly salary was NGN 200,000). A car was rented for project monitoring since Japanese consultants accompanied the monitoring (Daily rate was NGN12,000). For hypothesis examination, more ideal and appropriate figures were applied in order to grasp the actual cost of BDS provision.

[18] Gross margin (added value) per miller is NGN 1.3 million. The total number of millers in Kano State is estimated to be 4,208. Thus, NGN 1.3 million × 4,208 millers = NGN 5,470 million.

state is roughly NGN 270 million. Based on costs shown in Table 7-2 cost of BDS delivery to 4,208 millers in the state will be approximately NGN 103 million[19]. In order to generate 5% increase in GDP which is equal to NGN 270 million, NGN 103 million of public finance is needed for investment. If tax rate to value added is assumed to be 15%, this public investment can be recovered by tax revenues of two financial years. This simulation shows that (1) the economic return of BDS delivery is secured since NGN 103 million of BDS delivery is assumed to yield NGN 270 million value added, and that (2) financial efficiency also can be achieve since annual costs of public investment can be recovered in two financial years at 15% income tax rate.

If target business types and enterprises for BDS delivery are well defined and 5% annual increase in their gross operating profit is expected, the economic and financial efficiency of BDS delivery by public sector can be secured. Whether 5% annual increase in gross operating profit is reasonable assumption is still questionable and observations regarding enterprises' responses to BDS delivery should be monitored to obtain actual increment rates.

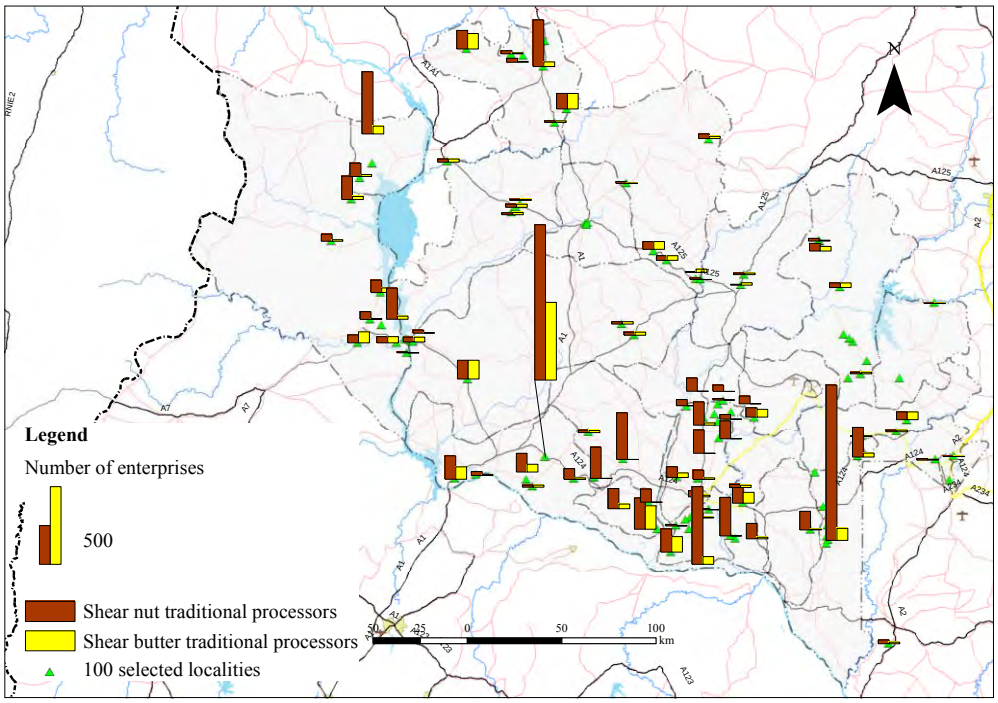
7.1.2 Example of analysis on shea butter traditional processors in Niger State

(1) Selection of business type for examination

In Niger State, it is assumed that there are 59 thousand shea butter traditional processors and 192 thousand shea nuts traditional processors. Almost all of them are micro enterprises. Except in Minna and Bida there is no shea butter mechanical processors in the state. Figure 7-4 shows that shea nuts traditional processors are densely located in the southern, western, and northern parts of the state, and shea butter traditional processors are mainly located in the south with a small concentration in the north. As indicated in Figure 7-5, prices of shea nuts vary depending on the regions. Compared to the distribution of the shea nut and butter traditional processors shown in Figure 7-4, price of shea nuts is high in the southern and northern parts of the state where shea butter traditional processors are concentrated. However this tendency does not apply in the western part of the state near the border with Benin Republic. In the area although the number of shea butter traditional processors is low, the price of shea nuts is high and number of shea nut traditional processors are large. This situation infers that there are high demands of shea nuts from Benin Republic. A large volume of shea nuts are exported and processed in Benin Republic. According to the information collected at the border towns a large amount of shea nuts is exported to Benin Republic where nuts are processed and exported to European countries. The observed price distribution of shea nuts and butter supports this economic activity.

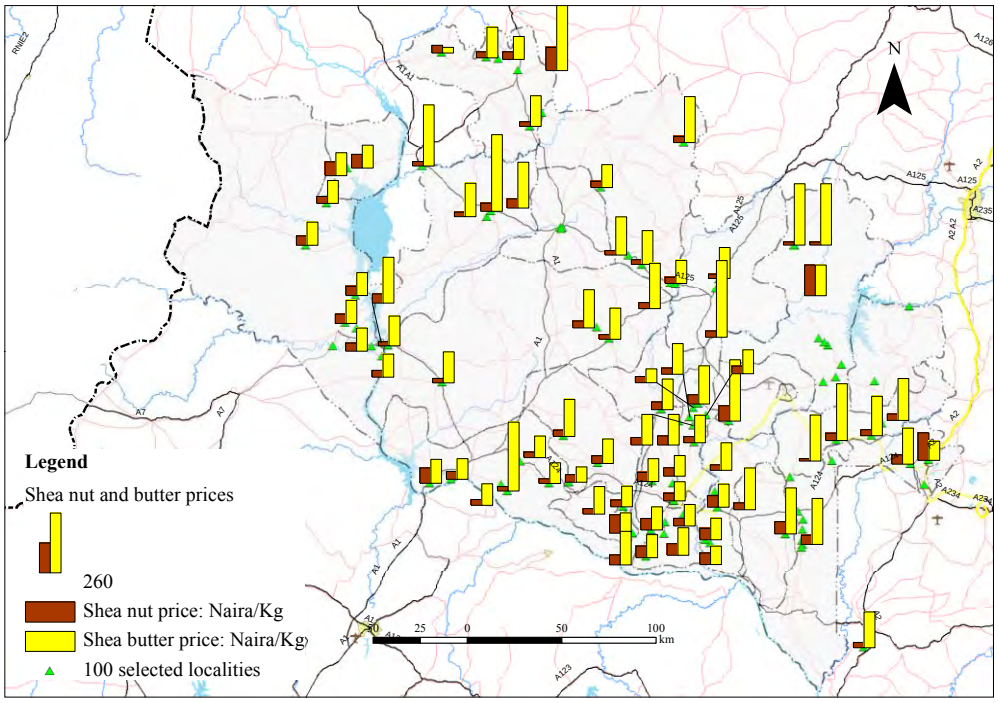
In regards to price of shea nuts, the farther it goes from producing area, it becomes lower. This fact indicates that unit price of shea nuts is low and it is traded in wide areas. Although a main producing area of shea butter is in southern part of the state, it is traded widely in the state. Unit price of shea butter is higher than shea nuts and ratio of shea butter delivery cost is lower than that of shea nuts. Therefore, shea butter trading and prices are less affected by cost of transportation, and traded widely without large price differences.

[19] Assuming that a BDS provider works 5 days per week, and 2 out of 5 days are spent for BDS provision to millers (a group of 10 millers). Thus NGN 244,992 (=612,480*(2/5)) is the annual cost of BDS provision to 1 group of millers. The total number of millers in Kano State is estimated as 4,208. Therefore, the annual total cost of BDS provision to the millers is: NGN 244,992 ×420.8 =NGN 103,092,633.



Source: Project Team

Figure 7-4 Distribution of traditional shea nuts and butter processors in Niger state



Source: Project Team

Figure 7-5 Price distribution of shea nuts and shea butter in Niger State

As shown in Table 3-3 the annual total value added by shea nut traditional processors in Niger State is NGN 90 billion whereas the total value added by shea butter traditional processors is NGN 23 billion. According to the analysis of accounting information of shea butter traditional processor reported in Chapter 6, 60% of shea butter price is the cost of shea nut as raw material. If raw material cost for shea nut processing assumed to be zero, prices of nut ant shea butter are kept constant, and all nuts are processed to shea butter in Niger State, value added generated by shea butter would be NGN 60 billion[20]. If this value and the estimated state-wide shea butter's value added of NGN 23 billion are compared, the difference between them becomes NGN 37 billion which is an estimate of lost added value due to a large amount of shea nuts traded out from Niger State. These characteristics of the shea product value chain indicate a significant opportunity of increasing added value of shea better production by providing BDSs to the producers. This is one reason for selecting shea butter traditional processors for the hypothesis testing.

(2) Establishment of assumptions regarding cost of BDS delivery and opportunity cost

To compare costs required for BDS delivery and increased added value by BDS provision, costs of BDS delivery by a government officer staying in Minna to a group of shea butter traditional processors consisting of 10 enterprises in Katcha area are estimated. The officer is assumed to visit Katcha area once a week and five times a month. As shown in Table 7-3 required daily cost for one visit to provide BDSs to 10 enterprises is NGN 3,000. In addition to the officer's visit to Katcha, the officer is assumed to provide marketing BDSs (i.e. facilitation of negotiations between traditional processors and traders) three times a month in Katcha area. Under these assumptions, the estimated monthly cost of BDS provision to 10 processors in Katcha is NGN 24,000 as shown in Table 7-4.

Table 7-3 Daily cost of BDS delivery by an officer in Minna to enterprises in Katcha

Cost items	Amount	Breakdown
Salary	NGN 1,667	NGN 50,000/month÷30days = NGN 1,667
Transportation (fuel cost)	NGN 1,300	NGN 65/litter×20 litter
Total	NGN 3,000	NGN 1,667+NGN 1,300=NGN 2,967≈NGN 3,000

Source: Project Team

Table 7-4 Monthly cost of BDS delivery by an officer in Minna to enterprises in Katcha

Cost items	Amount	Breakdown
Monthly cost required for an officer in Minna to visit and provide BDSs to 10 enterprises in Katcha area (5 days visit per a month)	NGN 15,000	NGN 3,000×5 days /Month
Monthly cost required for an officer in Minna to provide marketing BDSs (3 days per month)	NGN 9,000	NGN 3,000×3 days
Total	NGN 24,000	

Source: Project Team

To estimate the amount of added value from employment of the high quality shea butter production method improved by the pilot project the following assumptions are established. An average price of regular shea butter is set at NGN 3,700 per 20 kg which is prevailing shea butter price at the location of the pilot project. The price of the high quality shea butter produced under the pilot project is set

[20] NGN 60 billion is calculated by the following formula: (NGN 90 billion x 40%)/60%.

NGN 4,500 per 20 kg which is also high-end market price in the Nigerian shea butter market. This means that 20% price increase can be achieved from the quality improvement. For the production of high quality shea butter the processors are assumed to employ the improved method which does not require additional labour and costs. Further assuming that ten shea butter traditional processors produce 1,000 kg of shea butter per month, the added value due to the application of improved method is NGN 40,000 as shown in Table 7-5.

Table 7-5 Added value from production of higher quality shea butter

Value items	Amount	Breakdown
a) Price of regular products	NGN 185,000	NGN 3,700×1,000kg÷20kg
b) Price of higher quality products	NGN 225,000	NGN 4,500×1,000kg÷20kg
c) Added value (c=b-a)	NGN 40,000	

Source: Project Team

(3) Results of examination of hypotheses

Based on the above assumptions, during the shea butter production season in Katcha area, estimated monthly generation of increased value added is NGN 40,000 and cost of BDS delivery for the increase is estimated to NGN 24,000. In this case the increase is NGN 16,000 larger than the cost of BDS delivery, and the hypothesis 1-1 that increase of value added is larger than cost of BDS is supported by this simulation. However, because the shea butter traditional processors belonging to the informal sector do not pay corporate tax, the hypothesis 1-2 that increase in tax revenues revised on increased added value is greater than the cost of BDS delivery cannot be hold. Thus, in this case the government's cost of BDS delivery is not covered by tax revenue from the benefited enterprises.

There are two preconditions to justify the hypothesis 1-1. The first precondition is that the assumed volume of orders for high quality products is made regularly. The second one is that target area for BDS provision is within one hour car drive distance from Minna where BDS officers are based.

Examination of hypothesis 1-1 against state-wide delivery of BDS was also carried out. The cost for BDS provided to all 59,000 shea butter traditional processors in the state to scale up a size of the value added of their businesses by 5% is calculated. In the previous example 20% increase of added value is expected whereas in this case moderate 5% increase is assumed. The total state-wide annual value added of this business type is NGN 23 billion (Table 3-2) and 5% increase in this added value is equal to NGN 1.15 billion.

As shown in Table 7-6 the total cost required for BDS delivery to all shea butter traditional processors in Niger State to increase value added by 5% is estimated to be NGN 885 million. This is smaller than the assumed increase of value added by NGN 1.15 billion. However, because of a large number of the traditional processors sparsely distributed throughout the state, the delivery of technical BDSs to the processors should be costly and difficult to implement. Hence, scaling up of BDS provision to the processors is not likely to be economical. The traditional shea butter market commonly exists throughout the local areas of Niger State (Figure 7-5). According to the observations the market saturates easily and does not differentiate high quality of shea butter from butter of the regular quality. It is expected that increase in amount of shea butter production quickly saturate the market, and that there is little incentive for the producers to produce high quality shea butter.

Table 7-6 Cost of BDS delivery to all shea butter traditional processors in Niger State

Items	Figures	Breakdown and remarks
Estimated total number of shea butter traditional processors in Niger State	59,000 enterprises	Based on study result
Necessary annual person days for BDS delivery to all enterprises in Niger State assuming that 10 enterprises require 50 days of BDS visits by an official annually	295,000 person*days	59,000 enterprises÷10 enterprises×50 days
Total cost required for BDS delivery to all shea butter traditional processors in Niger State without considering sparsely distributed processors	NGN 885 million	295,000 person*days× NGN 3,000/person*day

Source: Project Team

The results of hypothesis examination indicate that BDSs for concentration of shea butter industry to realise focussed and effective BDS delivery, expansion of production base and formalisation of the industry to secure quality and quantity of shea butter outputs and tax revenues, and promotion of access to non-traditional markets such as urban and international market need to be provided. By providing appropriate BDSs the foregone opportunity to increase added value of shea better production should be captured by the industry in Niger State.

7.2 Profitability and employment of MSMEs

The following two hypotheses were set up to examine results of the pilot project in profitability and employment of MSMEs.

Hypothesis 2-1: MSMEs improve profitability (improved financial efficiency of businesses).
Hypothesis 2-2: MSMEs increase the number of employees.

From financial perspective of the hypothesis 1-1, as presented in Chapter 5 and 6, some types of business showed potential for profit increase by cost reduction (e.g. traditional groundnut oil processors in Niger State), while some others kept books continuously to be able to analyse profitability of their businesses during the pilot project period. However, based on books, there was no type of business that presented clear increase in profit as a result of BDS. On the other hand, the presence of fabricators marketing improved equipment on a commercial basis proves existence of enterprises whose profitability have improved.

From employment perspective of the hypothesis 1-2, no information was confirmed during the pilot project period to demonstrate the relationship between BDS provision and increase in the number of employees. On the other hand, some types of business showed a tendency to increase profit and expand scale of business. It was confirmed that if BDS is continuously provided to expand businesses, employment would increase in an economy as a whole. Information was collected to run a simulation of employment increase for particular types of business.

In case of mechanical groundnut oil processors, for example, around 70% of their employees work on a temporary basis as presented in Table 3-10. Seasonality of groundnut is reflected in seasonal increase of temporary employees. On the other hand, Table 3-11 on salary of employees shows that about 50% of temporally employees receive monthly salary of NGN 13,000 to NGN 21,000, and about 30% of them receive NGN 7,000 to NGN 13,000. These salaries are relatively high indicating that employers (business owners) consider, to some extent, the risk of temporary employment. Business of

groundnut oil processing is stable all year around, which hinders enterprises from hiring permanent employees. Increase in one permanent employee means additional fixed cost to enterprises who cannot take such a high risk. In order to increase the number of employees, especially permanent employees, BDS needs to be provided to support management of business as a whole.

In the of traditional shea butter processors in Niger State, processors from two villages in Kacha area, who were supported under the pilot project, learned to produce shea butter of Grade 2 as defined by the Standard Organization of Nigeria (SON). However, market for high-quality shea butter was not found during the pilot project period, and quality improvement did not result in increase in profit or employment. As for traditional groundnut oil processors in Niger State, BDS provision introduced group purchase of raw materials and manual oil extract devise, which succeeded 10% of cost reduction and increase in profitability of enterprises supported by the pilot project. However, enterprises could not acquire a new market to absorb increased produce, and consequently, their profit and employment did not expand. It was confirmed that, in these cases, BDS on marketing is necessary to persuade buyers of value added and achieve sales.

7.3 Poverty reduction

The following hypothesis was set up to examine results of the pilot project in poverty reduction.

Hypothesis 3-1: Increase in added value generated by micro enterprises per unit BDS cost is greater than that generated by small and medium enterprises.

Increase in added value per unit cost of BDS provision could not be examined due to two reasons: financial information collected during the pilot project period was not accurate enough to make analysis for this hypothesis; and clear increase in value-added was not observed.

From the viewpoint of cost performance of BDS provision, micro-enterprises the cost of BDS provision to micro-sized enterprises per a unit increase on value-added is higher than the cost of BDS provision to small and medium enterprises. This analysis is guided by the following facts: micro-enterprises tend to have lower level of education; their management capacity tends to be small; and many of them are household industries that do not wish to expand scale of business. Therefore, from this view, BDS provision should focus on small and medium enterprises. It would be a policy issue to decide how much resources should be allocated to support micro-enterprises.

The number of micro-enterprises is enormous. As presented in Table 3-2, around 180,000 of rice parboilers and traditional groundnut oil processors are estimated to exist in Kano State. Meanwhile, the number of small and medium enterprises of all types of businesses in formal sector is about 6,300. Poverty reduction policy does not necessarily give priority to support of micro-enterprises. In the case of BDS provision focused on rice millers as mentioned in the above hypothesis testing, improved performance of rice millers can be expected to produce beneficial effect on informal micro-enterprise parboilers in upstream of the value chain. Resource investment in rice millers might secure steady business for parboilers, and this might also create larger impacts than direct provision of BDS to parboilers. The result of pilot project suggests that investment from the viewpoint of the value chain as a whole may possibly find a shortcut to poverty reduction.

On the other hand, BDS provision might yield a good effect on some micro-enterprises that meet certain conditions such as the following: high management capacity, favourable market of raw materials, and adoption of appropriate technology. Traditional groundnut oil processors in Niger State are good examples. Therefore, BDS providers need capacity to provide flexible services and select high potential types of business.

7.4 Entrepreneurship

The following hypothesis was set up to examine results of the pilot project in entrepreneurship.

Hypothesis 4-1: MSMEs assisted by SMEDAN improve entrepreneurship.

Entrepreneurship can be examined by observing practices of enterprises such as continuation of bookkeeping. Many enterprises adopted bookkeeping practice with support of BDS during the pilot project period. Provision of BDS also helped enterprises improve entrepreneurship in other ways such as continuing 5S practice, filing an application for a loan, and attempting to introduce machines. Based on the above findings, BDS provision was proved to improve entrepreneurship.

Kano State has the following cases. Traditional groundnut oil processors organized a group to cut down on raw material cost, and the group was registered at the Kano State Ministry of Commerce, Industry, Cooperatives, and Tourism. Cost of raw materials including transportation cost was reduced by securing raw materials as a group instead of individuals. As for bookkeeping, it was too difficult for traditional groundnut oil processors to continue on their own, but they understood its importance and showed willingness to continue. This is different from the case of rice parboilers who gave up on bookkeeping in the middle of the pilot project period. Rice millers, on the other hand, formed a group to apply for a loan to purchase machines. They continue bookkeeping on their own to be able to analyse cost reduction and future perspective of their business. As a result, they have developed capacity to apply for institutional finance as a group.

In Niger State, among 23 target enterprises, 19 enterprises except mechanical groundnut oil processors whose factories closed in the middle of the pilot project continued bookkeeping for nine month of monitoring period to understand own business more precisely.

Actions indicating improvement of entrepreneurship does not necessarily lead to outcome such as better business or increased profitability during the short period of the pilot project. The relationship between improved entrepreneurship and success in business was not fully examined. However, in order for BDS to result in good outcome, it is certainly the minimum condition that enterprises are willing to continuously improve their business, and BDS is continuously provided to those enterprises. Concentrating support to such enterprises will contribute to effective and efficient provision of BDS.

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Annexes

Annex 1: Results of product ranking exercise in Kano State

Results of product ranking exercise in Kano State

Value chains	Score
1. Rice	Reasons for being shortlisted: • Preselected by the government (1) Market needs: • Group A: very high (5); Group B very high (5) • Staple and affordable commodity in every household • High demand and high level of consumption in households, and processing opportunities for processors (2) Business potential of product: • Group A: very high (5); Group B: very high (5) • Competition with and substitution to imported rice • High demand for rice and milled rice with good quality (3) Local economy and gender equality: • Group A: very high (5); Group B: very high (5) • Employment creation and income generation due to variety of activities along the value chain (parboiling, trading, milling) (4) Policy priority: • Group A: very high (5); Group B: very high (5) • Many programmes and project at state and national levels (5) Complement to other interventions: • Group A: very high (5); Group B: high (4) • State government projects (Kano Rice Project), ProPcom/DFID, USAID MARKETS, Commercial Agriculture (World Bank assisted) and FADAMA projects • Interventions from state and Federal Governments and other organization like SG2000
2. Groundnut oil	Reasons for being shortlisted • Preselected by the government (1) Market needs: • Group A: very high (5); Group B: very high (5) • Used widely in food preparation, and available to and affordable for households • Various by-products such as cake and oil which is used for cooking (2) Business potential of product: • Group A: high (4); Group B: very high (5) • Demand is high, but there are substitutes such as the palm oil and vegetable oils (3) Local economy and gender equality: • Group A: very high (5); Group B: very high (5) • Cash crop and it processing creates many useful products such as the cake and oil (4) Policy priority: • Group A: very high (5); Group B: very high (5) • Policy of banning importation of cooking oils at national level and thus promoting the local production (5) Complement to other interventions: • Group A: high (4); Group B: average (3) • African Groundnut Council is located in World Bank supported Commercial Agriculture Project in Kano
3.	Reasons for being shortlisted

Value chains	Score
Leather products	• Preselected by the government (1) Market needs: • Group A: high (4); Group B: high (4) • Competition with Chinese products reduce local market needs and low purchasing power leads to lower demand • Competition with cheaper rubber products and thus demand is low, but it has high potential at international market (2) Business potential of product: • Group A: high (4); Group B: very high (5) • There are variety of products and substitutes exists especially for leather shoes • Possibility of improving quality of the local product is very high (3) Local economy and gender equality: • Group A: very high (5); Group B: average (3) • Employment of the youth, and important source of foreign earnings (4) Policy priority: • Group A: very high (5); Group B: very high (5) • Export incentives policy at national level (reduction of tax and tariff) (5) Complement to other interventions: • Group A: high (4); Group B: average (3) • State Government support processing, UNIDO provide supports for export
4. Hibiscus flower	Reasons for being shortlisted • Export potentials, income generation capacity, easy cultivation • Not widely cultivated in Kano (1) Market needs: • Group A: high (4); Group B: average (3) • Demand is high at both local and national level and there is also demand from food processing industries and other industries such as the tie and dye. • Demand and usage is mainly local (within the Hausa region) (2) Business potential of product: • Group A: high (4); Group B: average (3) • High value in terms of its price and there is increasing awareness of its medicinal values (3) Local economy and gender equality: • Group A: high (4); Group B: high (4) • Employment and high value in terms of its price (4) Policy priority: • Group A: low (2); Group B: low (2) • No policy or programme but state health officials encourage the use of the processed hibiscus juices for medicinal purposes (5) Complement to other interventions: • Group A: very low (1); Group B: very low (1) • No policy or intervention
5. Soybean	Reasons for being shortlisted • Widely used at micro levels, variety of processed products such as soymilk, condiments, soy cake and oils, all of economic significance • Not well compatible with Kano soils and climate (1) Market needs: • Group A: average (3); Group B: high (4) • Usage at household level is low (30%) • It has various important by-products such as the cake, milk, and oil

Value chains	Score
	• Available market for soy and its by-products and there is high demand (2) Business potential of product: • Group A: high (4); Group B: high (4) • It has various important by-products such as the cake, milk and oil (3) Local economy and gender equality: • Group A: high (4); Group B very high (5) • Export potentials, nutritional values, and processing potentials • Many by-products of significance (4) Policy priority: • Group A: high (4); Group B: high (4) • Ministry of health promotes it use for baby foods and other preparations and NAFDAC promote use of soy as nutritional supplements in food (5) Complement to other interventions: • Group A: average (3); Group B: average (3) • Export promotion at national level, Ministry of Health promotes the use of soy as baby and nutritional food
6. Moringa	Reasons for being shortlisted • High consumption locally, export potentials, medicinal values, high demand for moringa from local pharmacy, and simple to cultivate (1) Market needs: • Group A: average (3); Group B: average (3) • Consumed more in the rural areas (80 %) • Use locally for medicinal purposes, and high demand (2) Business potential of product: • Group A: very high (5); Group B: low (2) • Export potentials, high value in terms of price and its medicinal values • Production is low (3) Local economy and gender equality: • Group A: average (3); Group B: low (2) • Demand is increasing and has export potentials (4) Policy priority: • Group A: high (4); Group B: very low (1) • Seminars and workshops on its values are organized by governments and international aid agencies • No policy (5) Complement to other interventions: • Group A: high (4); Group B: low (2) • Can be complement with state government projects, studies, and workshops.
7. Tomato	Reasons for being shortlisted • Highly produced in Kano. There is wastage of the fresh due to lack of processing opportunities, and it employ many people (farmers and traders) in the state (1) Market needs: • Group A: very high (5); Group B: very high (5) • Consumption rate is high, price is cheap, yield is high, market demand is high with many outlets (2) Business potential of product: • Group A: very high (5); Group B: very high (5) • High consumption rates. • Production is high and all year round (3) Local economy and gender equality:

Value chains	Score
	• Group A: very high (5); Group B: very high (5) • Employment creation and income generation (4) Policy priority: • Group A: very high (5); Group B: very high (5) • State policy such as the export promotion village and plan to establish processing industries (5) Complement to other interventions: • Group A: high (4); Group B: high (4) • State government efforts in areas of production, processing, and marketing
8. Tie and dye	Reasons for being shortlisted • Involvement of local communities, viable business and Kano is centre of technical excellence • Only the rich people use the tie-dye products and thus market demand and potentials are very low (1) Market needs: • Group A: low (2); Group B: low (2) • Only in the cities among the rich individuals, the larger population depends on cheap imported textile products especially the Chinese products. • Demand is low and mainly among the rich in the cities (2) Business potential of product: • Group A: average (3); Group B: low (2) • The raw materials used are mostly imported (chemicals) and there is low demand for the finished products because there are expensive. • Not widely used and quantity produced is low (3) Local economy and gender equality: • Group A: average (3); Group B: low (2) • Employment capacity is low and the demand for the products is also low • The activity is declining (4) Policy priority: • Group A: average (3); Group B: very low (1) • State Government has interest in the industry, but there is no specific policy • Banned on importation on textile materials at national level (5) Complement to other interventions: • Group A: average (3); Group B: very low (1) • UNIDO provide technical support and state government shows interest from the point of view of cultural heritage

Annex 2: Results of product ranking exercise in Niger State

Results of product ranking exercise in Niger State

Value chains	Score
1. Shea butter	Reasons for being shortlisted • Preselected by the government (1) Market needs: • Group A: high (4); Group B: very high (5) • Exports are high. Local use within the state is not high. • Demand is high, use for pomade and confectionaries. (2) Business potential of product: • Group A: very high (5); Group B: very high (5) • Available in all zones of the state • Widespread, and the trees grown in the wild (3) Local economy and gender equality: • Group A: very high (5); Group B: very high (5) • Employ a lot of people (especially women) at local processing and marketing levels • Employ a lot of people (especially women) (4) Policy priority: • Group A: very high (5); Group B: very high (5) • State policy • State policy (5) Complement to other interventions: • Group A: very high (5); Group B: very high (5) • State interventions, GTZ projects • State interventions, GTZ projects
2. Groundnut oil	Reasons for being shortlisted • Preselected by the government (1) Market needs: • Group A: high (4); Group B: high (4) • Used widely in food preparation, export potential is high. • Oil is highly consumed and the by-products are used in animal feeds. (2) Business potential of product: • Group A: high (4); Group B: very high (5) • High production and processing potential but there is competition with other vegetable oils. • Production is high and widespread in the state. (3) Local economy and gender equality: • Group A: very high (5); Group B: very high (5) • Employ many people, especially rural women, and the emergence of modern processors • Employ many people at micro and small scale levels (4) Policy priority: • Group A: high (4); Group B: very high (5) • State policy • State policy (5) Complement to other interventions: • Group A: very low (1); Group B: medium (3) • No specific interventions

Value chains	Score
	• No much interventions
3. Yam	Reasons for being shortlisted • Preselected by the government (1) Market needs: • Group A: very high (5); Group B: high (4) • Local and national consumption and demand are high. Cross-border export is also very high. • Local and national consumption and demand are high. (2) Business potential of product: • Group A: very high (5); Group B: very high (5) • Widely cultivated and consumed. Its demand is always high (it has no enemy in the country in terms of consumption; i.e. everybody can use it as food). • Widely grown using different varieties, large number of farmers (3) Local economy and gender equality: • Group A: high (4); Group B: very high (5) • Employ mainly men but a few women are also involved • Employ many people and generate income and revenue to governments (4) Policy priority: • Group A: very high (5); Group B: very high (5) • State policy • State policy (5) Complement to other interventions: • Group A: high (4); Group B: very high (5) • State interventions • State interventions
4. Rice	Reasons for being shortlisted • Income generation capacity, widely cultivated (1) Market needs: • Group A: very high (5); Group B: very high (5) • Demand is high at both local and national levels. • Staple food and demand is very high. (2) Business potential of product: • Group A: very high (5); Group B: very high (5) • Very high production and processing potential, and market demand is always high. • High production and widely grown. (3) Local economy and gender equality: • Group A: very high (5); Group B: very high (5) • Very high production and processing activities throughout the year • Employ many people and generate income and revenue to governments (4) Policy priority: • Group A: very high (5); Group B: very high (5) • State and national policy • State and national policy (5) Complement to other interventions: • Group A: very high (5); Group B: very high (5) • State interventions, GTZ, USAID_MARKETS, etc. • Many interventions
5. Sorghum	Reasons for being shortlisted • Widely cultivated

Value chains	Score
(Red & White)	(1) Market needs: • Group A: high (4); Group B: high (4) • Demand from processing companies is high. • Local use and production is high. (2) Business potential of product: • Group A: high (4); Group B: very high (5) • Widely cultivated but production is not expanding. • Production is high and widespread. (3) Local economy and gender equality: • Group A: medium (3); Group B: high (4) • Production is not expanding because of competition with maize. • Employ many people and generate income and revenue to governments (4) Policy priority: • Group A: very high (5); Group B: high (4) • State policy • State policy (5) Complement to other interventions: • Group A: very high (5); Group B: medium (3) • State interventions, USAID-MARKETS • State interventions
6. Brass & glass work	Reasons for being shortlisted • Historic economic activity in some parts of the state (Bida) (1) Market needs: • Group A: low (2); Group B: medium (3) • Restricted within a particular area and the demand for the product is generally low. • Demand for the finished products is moderate. (2) Business potential of product: • Group A: high (4); Group B: high (4) • There is export potential if quality improves. • Traditional occupation in Bida area (3) Local economy and gender equality: • Group A: low (2); Group B: high (4) • Few people are involved. • Few people are involved but it gives them a lot of income. (4) Policy priority: • Group A: medium (3); Group B: high (4) • State policy • State policy (5) Complement to other interventions: Group A: very low (1); Group B: medium (3) No intervention Not much intervention
7. Maize	Reasons for being shortlisted • Widely cultivated (1) Market needs: • Group A: very high (5); Group B: high (4) • Consumption rate is high and it is cheap. It is also used as animal feed. • A staple food (2) Business potential of product:

Value chains	Score
	• Group A: very high (5); Group B: very high (5) • Production is high and it is grown widely in the state. • High production and widely grown (3) Local economy and gender equality: • Group A: very high (5); Group B: high (4) • Many uses, such as in poultry farming, where many women are involved. • Employment of people and reduces poverty (4) Policy priority: • Group A: very high (5); Group B: very high (5) • State and national policy • State and national policy (5) Complement to other interventions: • Group A: high (4); Group B: high (4) • State interventions, Melinda Gates Project • State interventions, Melinda Gates Project
8. Soy beans	Reasons for being shortlisted • Export potential (1) Market needs: • Group A: high (4); Group B: medium (3) • Demand from industrial processors is high. • Demand is moderate. Used as baby food. (2) Business potential of product: • Group A: high (4); Group B: medium (3) • High export potential • Few farmers are involved in the production (3) Local economy and gender equality: • Group A: high (4); Group B: high (4) • Used in animal feeds such as poultry. • Employment of people and reduces poverty (4) Policy priority: • Group A: medium (3); Group B: high (4) • State policy • State policy (5) Complement to other interventions: • Group A: low (2); Group B: medium (3) • State interventions • State interventions (little)
9. Locust beans	Reasons for being shortlisted • Employment generation for rural women (1) Market needs: • Group A: medium (3); Group B: high (4) • Local utilization is high • Local utilization is high as seasoning in food preparations. (2) Business potential of product: • Group A: medium (3); Group B: high (4) • Local utilization is high but the locust trees population is not increasing. • The trees are numerous and rural women are involved in the processing. (3) Local economy and gender equality: • Group A: medium (3); Group B: high (4) • Many rural women are involved in processing of locust beans into condiments.

Value chains	Score
	• Employment of people and reduce poverty (4) Policy priority: • Group A: very low (1); Group B: medium (3) • No policy • No policy (5) Complement to other interventions: • Group A: very low (1); Group B: very low (1) • No intervention • No intervention

Annex 3: State-wide baseline survey questionnaire

Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalizing the Rural Economy in the Federal Republic of Nigeria

State-Wide Survey

(Version 2 August 8, 2011)

Niger State

Protocol

This questionnaire is developed for the Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalizing the Rural Economy in the Federal Republic of Nigeria. The Technical Cooperation is financed by Japan International Cooperation Agency, and implemented jointly by Federal Ministry of Commerce and Industry, Small and Medium Enterprises Development Agency of Nigeria, State Governments of Kano and Niger, and the Technical Cooperation Team which is independent from Nigerian authorities. Information collected by this questionnaire is used only by the Team, and is strictly kept confidential. The Team thanks for your cooperation.

Qcode	Question	Locality ID:
00	**Section 1 Survey administration**	
00.01	**What is locality's identity?**	
00.01.01	State Code	N G Niger State
00.01.02	LGA Code	N G . Name
00.01.03	No. in population list	
00.01.04	Locality ID	N G . .
00.01.05	Locality Name	
00.01.06	Name of respondent	
00.01.07	Telephone number	
00.02	**What is surveyors' identity?**	
00.02.01	Supervisor ID	. Name
00.02.02	Enumerator ID	. Name
00.03	**What are the results of the first visit?**	
00.03.01	Date of visit (dd.mm.yyyy)	. .
00.03.02	Visit start time (hh:mm)	: Duration (mmm)
00.03.03	Visit evaluation	1. Completed-end; 2. Incomplete-revisit; 3. Incomplete-end
00.03.04	Remarks	
00.06	**Where is location of locality (GPS measurement)?**	
00.06.01	Latitude	N ° . ' (Degree and decimal minutes)
00.06.02	Longitude	E ° . ' (Degree and decimal minutes)
00.06.03	Elevation	m

Questionnaire for State-wide Survey

Qcode	Question	Locality ID:
01	**Section 1 Shear butter production**	
01.01	**Shear nut production**	
01.01.01	Are there any households engaged in shear nut processing in your village?	[ ] - - 1. Yes; 2. No;
01.01.02	How many households are engaged in shear nut processing?	[ ][ ][ ] households
01.01.03	What is an average price of shear nut per one unit?	[ ][ ],[ ][ ][ ] naira unit:
01.02	**Shear butter production (traditional)**	
01.02.01	Are there any households engaged in traditional shear butter production in your village?	[ ] - - 1. Yes; 2. No;
01.02.02	How many households are engaged in traditional shear butter production?	[ ][ ][ ] households
01.02.03	What is an average price of shear butter per one unit?	[ ][ ],[ ][ ][ ] naira unit:
01.03	**Shear butter production (mechanical)**	
01.03.01	Are there any company engaged in mechanical shear butter production in your village?	[ ] - - 1. Yes; 2. No;
01.03.02	How many companies are engaged in mechanical shear butter production?	[ ][ ][ ] companies
01.03.03	What is an average price of shear butter per one unit?	[ ][ ],[ ][ ][ ] naira unit:
02	**Section 2 Groundnut oil production**	
02.01	**Groundnut oil production (traditional)**	
02.01.01	Are there any households engaged in traditional groundnut oil production in your village?	[ ] - - 1. Yes; 2. No;
02.01.02	How many households are engaged in traditional groundnut oil production?	[ ][ ][ ] households
02.01.03	What is an average price of groundnut oil per one unit?	[ ][ ],[ ][ ][ ] naira unit:
02.02	**Groundnut oil production (mechanical)**	
02.02.01	Are there any company engaged in mechanical groundnut oil production in your village?	[ ] - - 1. Yes; 2. No;
02.02.02	How many companies are engaged in groundnut oil production?	[ ][ ][ ] companies
02.02.03	What is an average price of groundnut oil per one unit?	[ ][ ],[ ][ ][ ] naira unit:
03	**Section 3 Yam trade and processing**	
03.01	**Yam trade and processing**	
03.01.01	Are there any yam market in your village?	[ ] - - 1. Yes; 2. No;
03.01.02	How many yam traders in your village?	[ ][ ][ ] traders
03.01.03	How many yam processors in your village?	[ ][ ][ ] traders
03.01.04	What is an average traded price of yam per one unit?	[ ][ ],[ ][ ][ ] naira unit:

Annex 4: Business enterprise baseline survey questionnaire

Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalizing the Rural Economy in the Federal Republic of Nigeria

Questionnaire for Business Enterprise Baseline Survey B

(Version 12 June 10, 2010)

Protocol

This questionnaire is developed for the Technical Cooperation for Development Planning on the One Local Government One Product Programme for Revitalizing the Rural Economy in the Federal Republic of Nigeria. The Technical Cooperation is financed by Japan International Cooperation Agency, and implemented jointly by Federal Ministry of Commerce and Industry, Small and Medium Enterprises Development Agency of Nigeria, State Governments of Kano and Niger, and the Technical Cooperation Team which is independent from Nigerian authorities. Information collected by this questionnaire is used only by the Team, and is strictly kept confidential. The Team thanks for your cooperation.

Qcode	Question	Enterprise ID:
01	**Section 1 Survey administration**	
01.01	**What is enterprise's identity?**	
01.01.01	Value chain ID [ ][ ]	Name _____
01.01.02	Cluster ID [ ][ ].[ ][ ]	Name _____
01.01.03	No. in population list [ ][ ][ ]	
01.01.04	Enterprises ID [ ][ ].[ ][ ].[ ][ ]	
01.01.05	Enterprise name _____	
01.01.06	Enterprise address _____	
01.01.07	Telephone number _____	
01.01.08	Type of business [ ][ ][ ][ ] --- 1. Production; 2. Processing; 3. Trading; 4. Retailing; 5. Other ( ) *(Multiple choice allowed)*	
01.02	**What is surveyors' identity?**	
01.02.01	Supervisor ID [ ][ ].[ ][ ]	Name _____
01.02.02	Enumerator 1 ID [ ][ ].[ ][ ]	Name _____
01.02.03	Enumerator 2 ID [ ][ ].[ ][ ]	Name _____
01.03	**What are the results of the first visit?**	
01.03.01	Date of visit (dd.mm.yyyy) [ ][ ].[ ][ ].[ ][ ][ ][ ]	
01.03.02	Visit start time (hh:mm) [ ][ ]:[ ][ ] Duration (mmm) [ ][ ][ ]	1. Completed-end; 2. Incomplete-revisit; 3. Incomplete-end
01.03.03	Visit evaluation [ ] ---	
01.03.04	Remarks _____	
01.04	**What are the results of the second visit?**	
01.04.01	Date of visit (dd.mm.yyyy) [ ][ ].[ ][ ].[ ][ ][ ][ ]	
01.04.02	Visit start time (hh.mm) [ ][ ]:[ ][ ] Duration (mmm) [ ][ ][ ]	1. Completed-end; 2. Incomplete-revisit; 3. Incomplete-end
01.04.03	Visit evaluation [ ] ---	
01.04.04	Remarks _____	
01.06	**Where is location of location (GPS measurement)?**	
01.06.01	Latitude N [ ][ ]° [ ][ ].[ ][ ][ ]'	(Degree and decimal minutes)
01.06.02	Longitude E [ ][ ]° [ ][ ].[ ][ ][ ]'	(Degree and decimal minutes)
01.06.03	Elevation [ ][ ][ ] m	

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
02	**Section 2 Establishment of enterprise**	*(Ask an owner or representative of the firm.)*
02.01	**What is status of your enterprise?**	
02.01.01	Year of enterprise establishment (yyyy)	☐☐☐☐ ☐☐ years ago
02.01.02	Legal status of enterprise ☆(If 2, → 02.01.04)	☐ - - 1. Incorporated; 2. Informal
02.01.03	Main stock holders	☐ - - 1. Employee(s); 2. Non-employee(s)
02.01.04	Number of offices and/or factories	☐☐ locations
02.01.05	Number of employees including owners	☐☐ persons

02.02 What are the characteristics of employers and employees?

	(a) What is this person's main duty? 1. Manager; 2. Accountant; 3. Labourer; 4. Technician; 5. Other	(b) Is this person a respondent for this questionnaire? 1. Yes; 2. No	(c) What is this person's final education? 1. Primary; 2. Secondary, 3. High school., 4. Vocational school; 5. University/college; 6. No education	(d) What is person's gender? 1. Male; 2. Female	(e) What is person's age? (year)	(f) What is relationship to the owner? 1. Spouse; 2.Children; 3. Parents; 4. Relatives; 5. Non relative	(g) What is this person's employment status? 1. Owner; 2. Permanent; 3. Temporary	(h) Does this person have a contract with this company? 1. Yes; 2. No	(i) How long has this person been employed at this company? (year)	(j) Length of employment in the last 12 months? (month)	(k) How much is this person's monthly salary? (Naira)
02.02.00	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
02.02.01											
02.02.02											
02.02.03											
02.02.04											
02.02.05											
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02.02.14											
02.02.15											
02.02.16											
02.02.17											
02.02.18											
02.02.19											
02.02.20											

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
03	**Section 3 Business management practices**	
03.01	**Bookkeeping**	
03.01.01	How do you manage finance for your business? ☆(If 3 or 4→03.01.04)	☐ - - 1. By double entry bookkeeping; 2. By cash book method; 3. By estimation; 4. No management
03.01.02	Can you show your bookkeeping record?	☐ - - 1. Yes; 2. No.
03.01.03	Are financial statements prepared? *(Note: Financial statements are balance sheet, profit-and-loss statement, and cash flow statement)* ☆(→03.01.05)	☐ - - 1. Prepared; 2. Prepared and audited; 3. Prepared, audited, and reported; 4. Not prepared
03.01.04	What is the reason for not practicing bookkeeping?	☐ - - 1. There is no need. 2. Skills and knowledge are lacking; 3. Other ( )
03.01.05	When does your financial year starts? (month)	☐☐
03.01.06	Do you pay business tax?	☐ - - 1. Yes; 2. No;
03.02	**Formal source of loans**	
03.02.01	Do you obtain loans from commercial banks? ☆(If 2→03.02.12)	☐ - - 1. Yes; 2. No;
03.02.02 03.02.03 03.02.04 03.02.05	What types of bank from which you obtain loans?	☐ - - 1. Commercial banks; ☐ - - 2. Micro-financing banks/institutions; ☐ - - 3. Specialised public banks ☐ - - 4. Other (
03.02.06	Do you use loan fund for investment?	☐ - - 1. Yes; 2. No;
03.02.07	Do you use loan fund for business operation cost?	☐ - - 1. Yes; 2. No;
03.02.08	How many times did you borrow from a bank(s) in the last 12 months?	☐☐ times
03.02.09	What is an average months of the loan?	☐☐ months
03.02.10	What is an average interest rates of the loan?	☐☐ %
03.02.11	What is an outstanding loan from a bank? ☆(→03.02.13)	☐☐☐,☐☐☐,☐☐☐ Naira
03.02.12	What is the reason for not obtaining loan from a bank?	☐ - - 1. Rejected by a bank; 2. There is no loan service available; 3. Other ( )
03.02.13	Do you want to obtain loan from a bank?	☐ - - 1. Yes; 2. No;
03.03	**Informal source loans**	
03.03.01	Do you obtain loan from informal sources for your business? ☆(If 2→03.03.10)	☐ - - 1. Yes; 2. No;
03.03.02 03.03.03	What is a source of your informal loan?	☐ - - 1. Immediate family (parents, brothers, etc.); 2. ☐ - - Relatives; 3. Friends; 4. Money render; 5. Other ( )
03.03.04	Do you use loan for investment?	☐ - - 1. Yes; 2. No;

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
03.03.05	Do you use loan fund for business operation cost?	☐ - - 1. Yes; 2. No;
03.03.06	How many times did you practice informal credit in the last 12 months?	☐☐ times
03.03.07	What is the average duration of the loan?	☐☐ months
03.03.08	What is an average interest rates of the loan?	☐☐ %
03.03.09	What is an outstanding loan from an informal source?	☐☐☐,☐☐☐,☐☐☐ Naira
	☆(→03.03.13)	
03.03.10 03.03.11 03.03.12	What is the reason for not obtaining informal loan?	☐ - - 1. No loan service needed; 2. There is no loan ☐ - - service; 3. Very high interest rate; ☐ - - 4. Rejected; 5. Other ( )
03.03.13	Do you want to obtain loan from an informal source?	☐ - - 1. Yes; 2. No;
03.04	**Credit base transactions and cash based transactions**	
03.04.01	Do you practice dealings on credit (DOC) with suppliers?	☐ - - 1. Yes; 2. No;
	☆(If 2→03.04.04)	
03.04.02	Why do you practice dealings on credit with suppliers?	☐ - - 1. There was a record of repayment; 2. Business has been successful; 3. There is enough collateral; 4. Following the business custom; 5. Lack of cash (cash flow ploblem); 6. Other ( )
03.04.03	What % of monetary transactions are DOC?	☐☐ %
03.04.04 03.04.05	Why do you practice cash-based transactions with suppliers?	☐ - - 1. Avoid risk of default; ☐ - - 2. Requested from suppliers; 3. There is no business customs of DOC; 4. Other ( )
04	**Business development service provision and perceived needs**	
04.01	**Expected future of business**	
04.01.01	What do you want to do with your business?	☐ - - 1. Expand business for more profit; 2. Stabilize business for secure income; 3. Scale down business; 4. Shut down
04.02	**Perceived problems by enterprise: Registration**	
04.02.01	Is your business registered?	☐ - - 1. Yes; 2. No;
	☆(If 1→04.02.05)	
04.02.02	Do you want to register your business?	☐ - - 1. Yes; 2. No;
04.02.03	What is the reason for not registering your business?	☐ - - 1. Not necessary; 2. Do not have a knowledge of doing it. 3. Other ( )
04.02.04	Do you want to receive BDSs to help your business registered?	☐ - - 1. Yes; 2. No;
04.02.05	Do you see a problem in the business registration process?	☐ - - 1. Yes; 2. No;
04.02.06	Have you tried to mitigate a problem for business registration?	☐ - - 1. Yes, I tried by myself; 2. Yes, I obtained BDSs; 3. No
	☆(If 1→04.03.01, If 2→04.02.07, If 3→04.02.09)	

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
04.02.07 04.02.08	What BDS provider(s) mitigated your business registration problem? ☆(→04.03.01)	☐☐ 1. SMEDAN; 2. State Government; 3. NGO; 4. Private sector
04.02.09 04.02.10	What was the reason for not seeking mitigation of business registration problem?	☐☐ 1. Not necessary; 2. Do not have a knowledge of doing it; 3. Not enough fund to do it; 4. Other ( )
04.03	**Perceived problems by enterprise: Business dispute**	
04.03.01	Have you tried to mediate a business dispute? ☆(If 1→04.03.06, If 2→04.03.02, If 3→04.03.04)	☐ 1. Yes, I tried by myself; 2. Yes, I obtained BDSs; 3. No
04.03.02 04.03.03	What BDS provider(s) mediated your business dispute? ☆(→04.03.06)	☐☐ 1. SMEDAN; 2. State Government; 3. NGO; 4. Private sector
04.03.04 04.03.05	What was the reason for not mediating business disputes? ☆(→04.03.06)	☐☐ 1. Not necessary; 2. Do not have a knowledge of doing it; 3. Not enough fund to do it; 4. Other ( )
04.03.06	Do you want to receive a service to obtain skills for business dispute?	☐ 1. Yes; 2. No;
04.04	**Human resource management (1. Management skills)**	
04.04.01	Have you tried to improve your management skills? ☆(If 1→04.04.06, If 2→04.04.02, If 3→04.04.04)	☐ 1. Yes, I tried by myself; 2. Yes, I obtained BDSs; 3. No
04.04.02 04.04.03	What BDS provider(s) improved your management skills? ☆(→04.04.06)	☐☐ 1. SMEDAN; 2. State Government; 3. NGO; 4. Private sector
04.04.04 04.04.05	What was the reason for not improving your management skills? ☆(→04.04.06)	☐☐ 1. Not necessary; 2. Do not have a knowledge of doing it; 3. Not enough fund to do it; 4. Other ( )
04.04.06	Do you want to receive BDSs to improve your management skills?	☐ 1. Yes; 2. No;
04.05	**Human resource management (2. Technical skills)**	
04.05.01	Have you tried to improve your technical skills? ☆(If 1→04.05.06, If 2→04.05.02, If 3→04.05.04)	☐ 1. Yes, I tried by myself; 2. Yes, I obtained BDSs; 3. No
04.05.02 04.05.03	What BDS provider(s) improved your technical skills? ☆(→04.05.06)	☐☐ 1. SMEDAN; 2. State Government; 3. NGO; 4. Private sector
04.05.04 04.05.05	What was the reason for not improving your technical skills? ☆(→04.05.06)	☐☐ 1. Not necessary; 2. Do not have a knowledge of doing it; 3. Not enough fund to do it; 4. Other ( )
04.05.06	Do you want to receive a service to improve your technical skills?	☐ 1. Yes; 2. No;

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
04.06	**Technology**	
04.06.01	Have you tried to improve the technology of your company? ☆(If 1→04.06.06, If 2→04.06.02, If 3→04.06.04)	[ ] - - 1. Yes, I tried by myself; 2. Yes, I obtained BDSs; 3. No
04.06.02 04.06.03	What BDS provider(s) improved technology level? ☆(→04.06.06)	[ ] - - 1. SMEDAN; 2. State Government; 3. NGO; [ ] - - 4. Private sector
04.06.04 04.06.05	What was the reason for not improving the technology? ☆(→04.06.06)	[ ] - - 1. Not necessary; [ ] - - 2. Do not have a knowledge of doing it; 3. Not enough fund to do it; 4. Other ( )
04.06.06	Do you want to receive a service to improve your company's technology level?	[ ] - - 1. Yes; 2. No;
04.07	**Marketing**	
04.07.01	Have you tried to mitigate a marketing problem? ☆(If 1→04.07.06, If 2→04.07.02, If 3→04.07.04)	[ ] - - 1. Yes, I tried by myself; 2. Yes, I obtained BDSs; 3. No
04.07.02 04.07.03	What service provider mitigated your marketing problem? ☆(→04.07.06)	[ ] - - 1. SMEDAN; 2. State Government; 3. NGO; [ ] - - 4. Private sector
04.07.04 04.07.05	What was the reason for not improving the merketing technology? ☆(→04.07.06)	[ ] - - 1. Not necessary; [ ] - - 2. Do not have a knowledge of doing it; 3. Not enough fund to do it; 4. Other ( )
04.07.06	Do you want to receive a service to obtain knowledge for marketing?	[ ] - - 1. Yes; 2. No;
04.08	**BDS needs perceived by enterprise**	
04.08.01 04.08.02 04.08.03 04.08.04	What free BDS support do you need? (Rank 1) What free BDS support do you need? (Rank 2) What commercial BDS support do you need? (Rk1) What commercial BDS support do you need? (Rk2)	[ ] - - 1. Technical support; 2. Financial support; [ ] - - 3. Advisory support; 4. Facilitative support; [ ] - - 5. Other support ( ) [ ] - -
04.09	**Current provider of business development services (BDSs)**	
04.09.01	Do you know SMEDAN provides BDS? ☆(If 3→ 04.09.04)	[ ] - - 1. Yes for free; 2. Yes at cost; 3. No
04.09.02	Have you received services from SMEDAN? ☆(If 1→ 04.09.04)	[ ] - - 1. Yes; 2. No;
04.09.03	What is the reason for not receiving services of SMEDAN?	[ ] - - 1. No information available; 2. It takes time to receive service; 3. Services do not match my needs; 4. Other ( )
04.09.04	Do you know State Government provide BDS? ☆(If 3, → 04.09.07)	[ ] - - 1. Yes for free; 2. Yes at cost; 3. No
04.09.05	Have you received services from State Government? ☆(If 1, → 04.09.07)	[ ] - - 1. Yes; 2. No;
04.09.06	What is the reason for not receiving services of State Government?	[ ] - - 1. No information available; 2. It takes time to receive service; 3. Services do not match my needs; 4. Other ( )

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
04.09.07	Do you know NGOs provide BDS? ☆(If 3, → 04.09.10)	☐ - - 1. Yes for free; 2. Yes at cost; 3. No
04.09.08	Have you received services from NGOs? ☆(If 1, → 04.09.10)	☐ - - 1. Yes; 2. No;
04.09.09	What is the reason for not receiving services of NGOs?	☐ - - 1. No information available; 2. It takes time to receive service; 3. Services do not match my needs; 4. Other ( )
04.09.10	Do you know private enterprises provide BDS? ☆(If 4, → 05)	☐ - - 1. Yes for free; 2. Yes at cost; 3. Yes for free and at cost; 4. No
04.09.11	Have you received services from private enterprises? ☆(If 1, → 05)	☐ - - 1. Yes; 2. No;
04.09.12	What is the reason for not receiving services of private enterprises?	☐ - - 1. No information available; 2. It takes time to receive service; 3. Services do not match my needs; 4. Other ( )

05 Section 5 Profit and Loss Statement (Income Statement)

05.01 What was the value of downstream merchandise annual sales during the last financial period or 12 months?

05.01.00	(a) Merchandise	(b) VC item? 1. Yes; 2. No	(c) Volume unit	(d) Annual sales Volume	(e) Annual sales Price/unit (Naira)	(f) Annual sales Value (d)*(e) (Naira)
05.01.01						
05.01.02						
05.01.03						
05.01.04						
05.01.05						
05.01.06						
05.01.07						
05.01.08	Total					

05.02 What was the value of downstream merchandise inventory during the last financial period or 12 months?

05.02.00	(a) Merchandise (same as 05.01)	(b) Volume unit	(c) Beginning inventory Volume	(d) Beginning inventory Price/unit (Naira)	(e) Beginning inventory Value (c)*(d) (Naira)	(f) Ending inventory Volume	(g) Ending inventory Price/unit (Naira)	(h) Ending inventory Value (f)*(g) (Naira)
05.02.01	05.01.01							
05.02.02	05.01.02							
05.02.03	05.01.03							
05.02.04	05.01.04							
05.02.05	05.01.05							
05.02.06	05.01.06							
05.02.07	05.01.07							
05.02.08	Total							

05.02.09 Gross production: total (f) of 05.01 - total (e) of 05.02 + total (h) of 05.02

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:

05.03 What was the value of upstream raw material purchase during the last financial year or 12 months?

	(a) Raw materials	(b) VC item? 1. Yes; 2. No	(c) Volume unit	(d) Annual purchase Volume	(e) Annual purchase Price/unit (Naira)	(f) Annual purchase Value (d)*(e) (Naira)
05.03.00						
05.03.01						
05.03.02						
05.03.03						
05.03.04						
05.03.05						
05.03.06						
05.03.07						
05.03.08	Total					

05.04 What was the value of upstream raw material inventory during the last financial year or 12 months?

	(a) Merchandise (same as 05.03)	(b) Volume unit	(c) Beginning inventory Volume	(d) Beginning inventory Price/unit (Naira)	(e) Beginning inventory Value (c)*(d) (Naira)	(f) Ending inventory Volume	(g) Ending inventory Price/unit (Naira)	(h) Ending inventory Value (f)*(g) (Naira)
05.04.00								
05.04.01	05.03.01							
05.04.02	05.03.02							
05.04.03	05.03.03							
05.04.04	05.03.04							
05.04.05	05.03.05							
05.04.06	05.03.06							
05.04.07	05.03.07							
05.04.08	Total							

05.04.09 Gross raw material purchase: total (f) of 05.03 - total (e) of 05.04 + total (h) of 05.04

05.05 What were the values of annual expenses?

	(a) Major expense items	(b) Monthly expenses (Naira)	(c) Annual expenses (Naira)	(d) Note
05.05.00				
05.05.01	Salaries			
05.05.02	Transportation			
05.05.03	Utilities			
05.05.04	Repairs and maintenance			
05.05.05	Advertising			
05.05.06	Office supplies			
05.05.07	Communication			
05.05.08	Rent			
05.05.09	Insurance			
05.05.10	Interest paid			
05.05.11	Taxes and licenses			
05.05.12				
05.05.13				
05.05.14				
05.05.15				
05.05.16	Total			

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
05.06	**Calculation of net added value of enterprise**	
05.06.01	Copy value of gross production from 05.02.09	, , , Naira
05.06.02	Copy value of raw material from 05.04.09	— , , , Naira
05.06.03	Calculated net value added	, , , Naira
05.07	**Calculation of owner's added value**	
05.07.01	Copy net value added from 05.06.03	, , , Naira
05.07.02	Copy value of total expenses from 05.05.16	— , , , Naira
05.07.03	Calculated net owner's added value	, , , Naira

06 Section 6 Balance sheets of the beginning and end of the last financial year or 12 months

06.01 What are the values of assets at the beginning and end of the financial period?

		(a) Asset items	(b) Values at the beginning of the financial period (Naira)	(c) Values at the end of the financial period (Naira)	(d) Change of values d=c-b (Naira)	(e) Note
06.01.01	Liquid assets	Cash				
06.01.02		Bank deposit				
06.01.03		Accounts receivable - net				
06.01.04		Inventory				
06.01.05		Supplies				
06.01.06		Prepaid Insurance				
06.01.07		Investments				
06.01.08	Fixed assets	Land				
06.01.09		Land improvements				
06.01.10		Buildings				
06.01.11		Equipment				
06.01.12		Trucks				
06.01.13		Cars				
06.01.14		Motorcycles				
06.01.15		Bicycles/carts				
06.01.16		Accumulated depreciation				
06.01.17	Other ( )					
06.01.18	Assets total					

06.02 Liabilities and stockholder's equity

		(a) Liabilities and stockholder's equity	(b) Values at the beginning of the financial period (Naira)	(c) Values at the end of the financial period (Naira)	(d) Change of values d=c-b (Naira)	(e) Note
06.02.01	Liabilities	Notes payable (incl. loans)				
06.02.02		Accounts payable				
06.02.03		Wages payable				
06.02.04		Interest payable				
06.02.05		Taxes payable				
06.02.06		Warranty liability				
06.02.07		Unearned revenues				
06.02.08		Bonds payable				
06.02.09	Equity	Common stock				
06.02.10		Retained earnings				
06.02.11	Liabilities and equity total					

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
07	**Section 7 First selected downstream value chain merchandise**	
07.01	**Market trend of the first selected downstream value chain merchandise**	
07.01.01	What is the first selected downstream value chain merchandise? (05.01)	[ ][ ].[ ][ ].[ ][ ]
07.01.02	What is the recent market trend of the first selected downstream value chain merchandise?	Price [ ] - - - 1. Increased
07.01.03		Volume [ ] - - - 2. Not changed
		3. Decreased

07.02 What are prices, sales volume, and sales value of the first selected downstream value chain merchandise during the last financial period or 12 months?

07.02.00	(a) Month and year	(b) Sale price (Naira/unit)	(c) Sales volume (Unit:)	(d) Sales value (Naira)	(e) Note: Name of major buyers, quality, etc.
07.02.01	June 2009				
07.02.02	July 2009				
07.02.03	August 2009				
07.02.04	September 2009				
07.02.05	October 2009				
07.02.06	November 2009				
07.02.07	December 2009				
07.02.08	January 2010				
07.02.09	February 2010				
07.02.10	March 2010				
07.02.11	April 2010				
07.02.12	May 2010				
07.02.13	Total				

(Note: Total sale price and sales volue should be copied from Table 05.01)

07.03 What are the characteristics of buyers of the first selected downstream value chain merchandise during the last financial period or 12 months?

	(a)	(b)	Number of buyers and % of the total sale value by size of buyers									
	Month and year	Sales value	Large ent. >=200 psns >=500 mill N		Medium ent. 199-50 psns 500>50 mill N		Small ent. 49-10 psns 50>5 mill N		Micro-ent. <10 psns <5 mill N		Individual	
07.03.00	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		(Naira)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
07.03.01	June 2009											
07.03.02	July 2009											
07.03.03	August 2009											
07.03.04	September 2009											
07.03.05	October 2009											
07.03.06	November 2009											
07.03.07	December 2009											
07.03.08	January 2010											
07.03.09	February 2010											
07.03.10	March 2010											
07.03.11	April 2010											
07.03.12	May 2010											
07.03.13	Total											

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
08	**Section 8 Second selected downstream value chain merchandise**	
08.01	**Market trend of the second selected downstream value chain merchandise**	
08.01.01	What is the second selected downstream value chain merchandise?	[ ][ ].[ ][ ].[ ][ ]
08.01.02	What is the recent market trend of the second selected downstream value chain merchandise?	Price [ ] - - - 1. Increased Volume [ ] - - - 2. Not changed 3. Decreased

08.02 What are the prices, sales volume, and sales value of the second selected downstream value chain merchandise during the last financial period or 12 months?

08.02.00	(a) Month and year	(b) Sale price (Naira/unit)	(c) Sales volume (Unit:)	(d) Sales value (Naira)	(e) Note: Name of major buyers, quality, etc.
08.02.01	June 2009				
08.02.02	July 2009				
08.02.03	August 2009				
08.02.04	September 2009				
08.02.05	October 2009				
08.02.06	November 2009				
08.02.07	December 2009				
08.02.08	January 2010				
08.02.09	February 2010				
08.02.10	March 2010				
08.02.11	April 2010				
08.02.12	May 2010				
08.02.13	Total				

(Note: Total sale price and sales volue should be copied from Table 05.01)

08.03 What are the characteristics of buyers of the second selected downstream value chain merchandise during the last financial period or 12 months?

	(a)	(b)	Number of buyers and % of the total sale value by size of buyers									
	Month and year	Sales value	Large ent. >=200 psns >=500 mill N		Medium ent. 199-50 psns 500>50 mill N		Small ent. 49-10 psns 50>5 mill N		Micro-ent. <10 psns <5 mill N		Individual	
08.03.00	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		(Naira)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
08.03.01	June 2009											
08.03.02	July 2009											
08.03.03	August 2009											
08.03.04	September 2009											
08.03.05	October 2009											
08.03.06	November 2009											
08.03.07	December 2009											
08.03.08	January 2010											
08.03.09	February 2010											
08.03.10	March 2010											
08.03.11	April 2010											
08.03.12	May 2010											
08.03.13	Total											

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
09	**Section 9 First selected upstream value chain merchandise**	
09.01	**Market trend of the first selected upstream value chain merchandise**	
09.01.01	What is the first selected upstream value chain merchandise?	[ ][ ].[ ][ ].[ ][ ]
09.01.02	What is the recent market trend of the first selected upstream value chain merchandise?	Price [ ] - - - 1. Increased Volume [ ] - - - 2. Not changed 3. Decreased

09.02 What are the prices, sales volume, and sales value of the first selected upstream value chain merchandise during the last financial period or 12 months?

	(a) Month and year	(b) Purchased price (Naira/unit)	(c) Purchased volume (Unit:)	(d) Purchased value (Naira)	(e) Note: Name of major suppliers, quality, etc.
09.02.00					
09.02.01	June 2009				
09.02.02	July 2009				
09.02.03	August 2009				
09.02.04	September 2009				
09.02.05	October 2009				
09.02.06	November 2009				
09.02.07	December 2009				
09.02.08	January 2010				
09.02.09	February 2010				
09.02.10	March 2010				
09.02.11	April 2010				
09.02.12	May 2010				
09.02.13	Total				

(Note: Total sale price and sales volue should be copied from Table 05.02)

09.03 What are the characteristics of suppliers of the first selected upstream value chain merchandise during the last financial period or 12 months?

	(a) Month and year	(b) Purchased value	Number of suppliers and % of the total purchased value by size of suppliers									
			Large ent. >=200 psns >=500 mill N		Medium ent. 199-50 psns 500>50 mill N		Small ent. 49-10 psns 50>5 mill N		Micro-ent. <10 psns <5 mill N		Individual	
09.03.00	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		(Naira)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
09.03.01	June 2009											
09.03.02	July 2009											
09.03.03	August 2009											
09.03.04	September 2009											
09.03.05	October 2009											
09.03.06	November 2009											
09.03.07	December 2009											
09.03.08	January 2010											
09.03.09	February 2010											
09.03.10	March 2010											
09.03.11	April 2010											
09.03.12	May 2010											
09.03.13	Total											

Questionnaire for Business Enterprise Baseline Survey

Qcode	Question	Enterprise ID:
10	**Section 10 Second selected upstream value chain merchandise**	
10.01	**Market trend of the second selected upstream value chain merchandise**	
10.01.01	What is the second selected upstream value chain merchandise? (05.01)	[ ][ ].[ ][ ].[ ][ ]
10.01.02	What is the recent market trend of the second selected upstream value chain merchandise?	Price [ ] - - - 1. Increased
10.01.03		Volume [ ] - - - 2. Not changed
		3. Decreased

10.02 What are the prices, sales volume, and sales value of the second selected upstream value chain merchandise during the last financial period or 12 months?

10.02.00	(a) Month and year	(b) Purchased price (Naira/unit)	(c) Purchased volume (Unit:)	(d) Purchased value (Naira)	(e) Note: Name of major suppliers, quality, etc.
10.02.01	June 2009				
10.02.02	July 2009				
10.02.03	August 2009				
10.02.04	September 2009				
10.02.05	October 2009				
10.02.06	November 2009				
10.02.07	December 2009				
10.02.08	January 2010				
10.02.09	February 2010				
10.02.10	March 2010				
10.02.11	April 2010				
10.02.12	May 2010				
10.02.13	Total				

(Note: Total sale price and sales volue should be copied from Table 05.02)

10.03 What are the characteristics of suppliers of the second selected upstream value chain merchandise during the last financial period or 12 months?

	(a)	(b)	Number of suppliers and % of the total purchased value by size of suppliers									
	Month and year	Purchased value	Large ent. >=200 psns >=500 mill N		Medium ent. 199-50 psns 500>50 mill N		Small ent. 49-10 psns 50>5 mill N		Micro-ent. <10 psns <5 mill N		Individual	
10.03.00	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		(Naira)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
10.03.01	June 2009											
10.03.02	July 2009											
10.03.03	August 2009											
10.03.04	September 2009											
10.03.05	October 2009											
10.03.06	November 2009											
10.03.07	December 2009											
10.03.08	January 2010											
10.03.09	February 2010											
10.03.10	March 2010											
10.03.11	April 2010											
10.03.12	May 2010											
10.03.13	Total											

Annex 5: Example of business consultation form

Business consultation form

Cluster ID	K3.01 Groundnut oil traditional processors
Pilot ID	
Enterprise ID	
BLS and/or VCS ID	

Enterprise Name	
Type of Business	
Address	
Representative	
Telephone	

1. Environmental Analysis
1.1 Three C Analysis

3C	Definition	Characteristics
• Company	• Traditional groundnut oil processors in Tumfafi villege, Kano State	• Traditional groundnut oil processors use family labour, mostly women. • An individual processor consists of 2-3 family workers, on average. • About 200 numbers of traditional processors exist in Tumfafi village. • Only a small volume of groundnuts is produced in Kano State. • Major production costs include raw groundnuts, labour, and milling fee. • Cake called *kuli-kuli* made after oil extraction is sold. • During the off season, about 20% of traditional oil processors have to stop business due to scarcity of raw materials. • Price of groundnuts in Kano State is increasing in the last 5 years.
• Customer • Direct buyer • Next buyer	• (Direct) • Bulking agent • Retailers • (Next) • Traders in Dawanau market	• Retailers are located in Sabon Gari and Rimi markets in Kano City as well as within the communities where traditional oil processors reside. • Groundnut oil processed at Tumfafi village is sold to traders at Dawanau market through the bulking agents.
• Competitor	• Traditional oil processors in other areas • • Mechanical oil processors in Sharada •	• About 2,000 traditional oil processors exist in Dawakin Tofa LGA. • The large number of mechanical oil processors is located in Sharada, Kano Municipal. • Traditional oil processors and mechanical processors have the same target buyers.

1.2 Five force analysis

Forces	Point of Observation	Result of Analysis
• Industry Competitors	• Traditional oil processors in other areas • Mechanical oil processors in Sharada	• Other than Tumfafi village, the large numbers of traditional oil processors exist in Dawakin Tofa LGA. • The large number of mechanical oil processors is located in Sharada, Kano Municipal.
• Potential Entrants	• Women who want to start a traditional oil processing business	• Detailed information is not available.
• Buyers • Direct Buyers • Next Buyers	• (Direct) • Bulking agent • Retailers • (Next) • Traders in Dawanau market	• Retailers are located in Sabon Gari and Rimi markets in Kano City as well as within the communities where traditional oil processors reside. • Groundnut oil processed at Tumfafi village is sold to traders at Dawanau market through the bulking agents.
• Suppliers • Direct Suppliers • Previous Suppliers	• (Direct) • Local groundnut traders in Dawanau area • (Previous) • Traders from other states or local farmers	• Local groundnut traders purchase bulk of groundnuts in Dawanau market and sell to traditional processors in Tumfafi village. The amount of groundnuts per traditional processor is small. • Most of the groundnuts are delivered from other states. • The amount of groundnut produced in Kano State is low.
• Substitutes	• Vegetable oil, palm oil • Oil extracted by mechanical processors	• Vegetable oil from foreign countries are imported illegally and sold at cheaper price in Kano State. • Palm oil is mainly processed in southern parts of Nigeria. • The oil supply is regular and available in the markets at cheaper price than the oil extracted by traditional oil processors.

1.3 PQCD+4M

	Man	Machine	Material	Method	Explanation
Productivity ×	×	×	×	×	• S: Production process does not require any electricity, which leads to the stable supply of the oil. • W: Traditional way of oil extraction is not efficient. • Availability of raw materials is not stable throughout the year, which makes oil processors hard to regulate the productivity.
Quality	×	×	○	○	• S: Taste and smell of traditionally

	Man	Machine	Material	Method	Explanation
○					extracted oil is more favoured to consumers than the oil extracted by mechanical processors. • W: The quality of oil is not stable since it depends on the individual skills.
Cost ×	○	○	×	×	• S: The cost of machine maintenance is low. • W: Raw materials are generally cheaper in Tafawa Balewa than the ones in Dawanau market, where currently traditional oil processors purchase from. • Traditional oil processor purchase raw materials individually without any regularity. • Traditional oil processor lack financial knowledge.
Delivery ○	○	○	○	○	• S: Bulking agents collect and sell oil to the traders at markets. • W:
Safety ○	○	×	○	×	• S: • W: Traditional processing is more likely to cause back pain and burns. • No safety measure is applied.
Environment ○	×	×	○	○	• S: A large volume of groundnuts are traded into Kano State. • W: About 200 traditional processors in Tumfafi village, but they operate business individually.

1.4 SWOT

Internal Management Resources	External Business Environment
[Strengths] • Processors are willing to improve their skills to expand production. • Groundnut oil made with the traditional method has a high reputation for its taste and flavour. • Price of groundnut oil processed with traditional method is higher than the one with mechanical method due to high quality, which ensures more income.	[Opportunities] • Traders in Tafawa Balewa are able to provide raw groundnuts at cheaper price than the one in Dawanau market. • Dawanau market is located close to Tumfafi village. • The fabricators exist in Kano State to help traditional oil processors to improve the current machines used for the oil extraction.

Internal Management Resources	External Business Environment
[Weaknesses] • Traditional oil processors lack knowledge and practice of financial management (e.g. bookkeeping). • Traditional oil processors operate business individually from the stage of raw material purchase, production and sales of final products. • Their access to market information is very limited which negatively influence their business since they are not aware of the market where the materials are sold at cheaper price.	[Threats] • Only a small amount of groundnuts are produced in Kano State. • Price of groundnuts is increasing in the last 5 years. • About 2,000 traditional groundnut oil processors exist in Dawakin Tofa LGA. • Several kinds of vegetable oil as well as the groundnut oil extracted by mechanical processors are available at the markets. • Consumers prefer vegetable oil which contains less fat than the groundnut oil. • Vegetable oil from foreign countries are imported illegally and sold at cheaper price.

2. Management Direction

2.1 Growth Vector

		Product	
		Current	New
Market	Current	[Market penetration] • Form group(s) to purchase raw materials to improve the cost performance. • Purchase groundnuts from Tafawa Balewa to reduce the cost for raw materials. • Increase quantity of oil through the application of machine.	[Product development] • New product other than groundnut oil is not considered.
	New	[Market development] • Encourage traditional groundnut oil processors to find new markets in Kano State.	[Diversification] • New products other than groundnut oil will not be considered.

3. Strategy Formulation

3.1 Cross SWOT

Critical Success Factor	Opportunities	Threats
	• Traders in Tafawa Balewa are able to provide groundnuts at cheaper price than the one in Dawanau market. • Dawanau market is located very close to Tumfafi village. • The fabricators exist in Kano State to help traditional oil processors to improve the current machines used for the oil extractions.	• Only a small amount of groundnuts are produced in Kano State. • Price of groundnuts is increasing in the last 5 years. • About 2,000 traditional groundnut oil processors exist in • Dawakin Tofa LGA. • Several kinds of vegetable oil as well as the groundnut oil extracted by mechanical processors are available at the markets. • Consumers prefer vegetable oil

Critical Success Factor		Opportunities	Threats
			which contains less fat than the groundnut oil. • Vegetable oil from foreign countries are imported illegally and sold at cheaper price.
Strengths	• Processors are willing to improve their skills to expand production. • Groundnut oil made with the traditional method has a high reputation for its taste and flavour. • Price of groundnut oil processed with traditional method is higher than the one with mechanical method. Due to high quality, which ensures more income.	• [Taking advantage of strengths to seize opportunities] • Engage in group purchase of groundnuts at Tafawa Balewa where groundnuts are sold at cheaper price than Dawanau market. • Increase quantity of oil produced through the application of new machines	• [Taking advantage of strengths to avert the effect of threats] • Increase quantity of oil produced through the application of new machines
Weaknesses	• Traditional oil processors lack knowledge and practice of financial management (e.g. bookkeeping). • Traditional oil processors operate business individually from the stage of raw material purchase, processing and selling of final products. • Their access to market information is very limited which negatively influence their business since they are not aware of the market where the materials are sold at cheaper price.	• [Overcoming weaknesses to seize opportunities] • Carry out training on bookkeeping by BDSPs. • Engage in group purchase of groundnuts at Tafawa Balewa where groundnuts are sold at cheaper price than Dawanau market.	• [Overcoming weaknesses to avert the effect of threats]

3.2 Critical Success Factors

Priority	Critical Success Factor	Explanation
1	• Cost performance improvement of raw material purchase	• Currently, traditional groundnut oil processors purchase raw materials individually from the same market without any regularity. Through the formulation of women's groups and develop group purchase method, the cost performance of raw material purchase will be improved.
2	• Increase quantity through the application of manual oil extraction machine	• Current method used for oil extraction is not efficient. • Through the application of new manual oil extraction machine, the quantity is increased while the duration of oil extraction is reduced.

Priority	Critical Success Factor	Explanation
3	• Improvement in financial management skills through practice of bookkeeping	• Most of the traditional oil processors lack knowledge and practice financial management, and rely on memory. By training on bookkeeping, the traditional oil processors will be able to record transactions and analyse business performance.

4. Strategy Execution

4.1 Key Goal Indicators, Key Performance Index

	CSF	KGI	KPI
1	• Cost performance improvement of raw material purchase	• 1) 20% of the cost reduction of raw materials • 2) The regulation of the women's group is established.	• 20% of the cost reduction of raw materials.
2	• Increase quantity through the application of manual oil extraction machine	• Average 30% of production increase per participant	• 60% of usage of new machines
3	• Improvement of financial management skills through practice of bookkeeping	• 100 % • continuous bookkeeping practices	• 60% of self-bookkeeping practices

4.2 Summary of Monitoring

CSF1	Cost performance improvement of raw material purchase

KGI1	1) 20% of the cost reduction of raw materials 2) The regulation of the women's group is established.	
	Start	Finish

KPI1	20% of the cost reduction of raw materials								
	W0	W5	W10	W15	W20	W25	W30	W35	W40
KPI2									
	W0	W5	W10	W15	W20	W25	W30	W35	W40

CSF2	Increase quantity by the application of manual oil extraction machine

KGI2	Average 30% of production increase per participant	
	Start	Finish

KPI3	60% of usage of new machines								
	W0	W5	W10	W15	W20	W25	W30	W35	W40

KPI4									
	W0	W5	W10	W15	W20	W25	W30	W35	W40

CSF3	Improvement of financial management skills through practice of bookkeeping

KGI3	100 % continuous bookkeeping practices	
	Start	Finish

KPI5	60% of self-bookkeeping practices								
	W0	W5	W10	W15	W20	W25	W30	W35	W40
KPI6									
	W0	W5	W10	W15	W20	W25	W30	W35	W40

Annex 6: Formats for KPI and KGI

1. Key Performance Indicator (KPI) summary

Cluster ID	N1.01 (Emiworo)
Name	Traditional Shea Butter Processors

CSF1: Improve business management capacity

KPI 1: Attendance at follow-up meetings (100%)

		Value	Remarks
Week average	W1-4	100%	
Accumulated		100%	
Week average	W5-8	90%	
Accumulated		95%	
Week average	W9-12	90%	
Accumulated		93%	
Week average	W13-16	100%	
Accumulated		95%	
Week average	W17-20	90%	
Accumulated		94%	

KPI 2: Self record keeping (100%)

		Value	Remarks
Week average	W1-4	100%	
Accumulated		100%	
Week average	W5-8	100%	
Accumulated		100%	
Week average	W9-12	100%	
Accumulated		100%	
Week average	W13-16	100%	
Accumulated		100%	
Week average	W17-20	100%	
Accumulated		100%	

1. Key Performance Indicator (KGI)

CSF1: Improve business management capacity

KPI 1: Attendance at follow-up meetings (100%)

	Baseline	Attendees	Value	Remarks
Week 1	5	5	100%	
Week 2	5	5	100%	
Week 3	5	5	100%	
Week 4	5	5	100%	
Week 5	5	4	80%	
Week 6	5	5	100%	
Week 7	5	4	80%	
Week 8	5	5	100%	
Week 9	5	5	100%	
Week 10	5	3	60%	
Week 11	5	5	100%	
Week 12	5	5	100%	
Week 13	5	5	100%	
Week 14	5	5	100%	
Week 15	5	5	100%	
Week 16	5	5	100%	
Week 17	5	5	100%	
Week 18	5	4	80%	
Week 19	5	4	80%	
Week 20	5	5	100%	
Week 21	5	3	60%	
Week 22	5	5	100%	
Week 23	5	4	80%	
Week 24	5	5	100%	
Week 25	5	4	80%	
Week 26	5	5	100%	
Week 27	5	4	80%	
Week 28	5	5	100%	
Week 29	5	5	100%	
Week 30	5	4	80%	
Week 31	5	5	100%	
Week 32	5	5	100%	
Week 33	5	5	100%	
Week 34	5	4	80%	
Week 35	5	5	100%	
Week 36	5	3	60%	

3. Key Goal Indicator (KGI)

Cluster ID	N1.01 (Emiworo)
Name	Traditional Shea Butter Processors

CSF1: Improve business management capacity
KGI 1: Continuous record keeping: 80%

Accumulated	KPI 1	KPI 2	Value	Remarks
Week 1-4	100%	100%	100%	
Week 5-8	95%	100%	98%	
Week 9-12	93%	100%	97%	
Week 13-16	95%	100%	98%	
Week 17-20	94%	100%	97%	

CSF2: Quality improvement by introduction of simplified test kit and standardisation of processing method
KGI 2: Shea butter of Grade 2 (FFA less than 3%) can be intentionally produced

Accumulated	KPI 3	KPI 4	Value	Remarks
Week 1-4	0%	0%	0%	Baseline: total number of lots
Week 5-8	0%	0%	0%	
Week 9-12	0%	0%	0%	
Week 13-16	0%	0%	0%	
Week 17-20	0%	0%	0%	

CSF3: Increase of profit to large scale buyers which appreciate high quality shea butter
KGI 3: Increase of gross margin: 10%

Accumulated	KPI 5	KPI XX	Value	Remarks
Week 1-4	0%	0%	-	Baseline: gross margin druing W1-4
Week 5-8	0%	0%	-	
Week 9-12	0%	0%	-	
Week 13-16	0%	0%	-	
Week 17-20	0%	0%	-	

Annex 7: Simple accounting formats

1. Sales and purchase

Biz group	Egbanasara shea butte
Name	Ramatu Audu

Week 36 Sales Record

Date	Buyer	Amount	Quantity	Price
15-Jul	Mama Kaffin	3,400	1	3400
Week Total		3,400	1	3,400
Accumulated		13,600	4	3,400

Week 36 Purchase Record

Date	Supplier	Amount	Quantity	Price
15-Jul	Ramatu	1,500	1	1,500
Week Total		1,500	1	1,500
Accumulated		6,000	4	1,500

Week 33-36 Total Sales Ranking

Ranking	Buyer	Amount	Quantity	Price
1	Hauwawu	3,600	1	3,600
2	Dantala	3,200	1	3,200
3	Ya Kanko	3,400	1	3,400
4	Mama Kaffin	3,400	1	3,400
Week33-36 All Total		13,600	4	3,400

Week 33-36 Total Purchase Ranking

Ranking	Supplier	Amount	Quantity	Price
1	Ramatu	6,000	4	1,500
2				
3				
4				
Week33-36 All Total		6,000	4	1,500

2. Inventory and cash transactions

Biz group	Egbanasara shea butter
Name	Ramatu Audu

Week 36 Material Inventory

Date	Out	In	Balance
15-Jul	1	1	0
Week Total	1	1	
Accumulated	4	4	

Week 36 Cash & Expense

Date	Cash in	Who	Cash out	Who/Why
15-Jul	3,400	Mama Kaffin	1,500	Ramatu
15-Jul			400	Milling
15-Jul			200	Transport
Week Total	3,400		2,100	
Accumulated	13,600		8,400	

Week 33-36 Material Inventory

	Out	In	Balance
Total	4	4	0
Week33-36 Tota	4	4	0

Week33-36 Buyer /Supplier

Ranking	Cash in	Who	Cash out	Who/Why
1	3,600	Hauwawu	6,000	Ramatu
2	3,200	Dantala		
3	3,400	Ya Kanko		
4	3,400	Mama Kaffin		
Week33-36 Tot	13,600		6,000	

Week 33-36 Material Inventory

	Quantity	Amount	Price
Beginning Balan	0	0	0
Total in	0	6,000	1,500
Total out	0	6,000	
Ending Balance	0	0	1,500

Week 33-36 Expense Item

Rank	Expense	Amount
1	Milling	1,600
2	Transport	800
3		
4		
5		
Others		
Total		2,400

3. Profit and loss, and balance sheet

Biz group	Egbanasara shea butter
Name	Ramatu Audu

Week 33-36 Profit & Loss

	Amount	%
Sales	13,600	100%
Material out	6,000	44%
Expenses	2,400	18%
Income for Family	5,200	38%

Week 33-36 Balance Sheet

	Amount		Amount
Cash in Hand	43,368	A/Payable	0
A/Receivable	0	Loan from Bank	0
Material	0	Loan from Others	0
Machine&Equip	0	Family Holdings	43,368
Total	43,368	Total	43,368

4. Monthly summary of profit and loss, and balance sheet

Biz group	Shea nuts traditional processors									
Name	Ramatu Audu									
Period	1	2	3	4	5	6	7	8	9	Total
Sales	46,000	28,000	15,400	16,000	16,000	16,000	12,000	16,000	13,600	179,000
Quantity	15	8	4	4	4	4	3	4	4	50
Price	3,067	3,500	3,850	4,000	4,000	4,000	4,000	4,000	3,400	3,580
Material	33,400	16,700	9,200	10,800	11,200	11,200	8,400	11,200	6,000	118,100
Quantity	15	8	4	4	4	4	3	4	4	50
Price	2,227	2,088	2,300	2,700	2,800	2,800	2,800	2,800	1,500	2,362
Gross Margin	12,600	11,300	6,200	5,200	4,800	4,800	3,600	4,800	7,600	60,900
% of Sales	27%	40%	40%	33%	30%	30%	30%	30%	56%	0
Expenses	7,020	4,080	3,060	3,900	2,260	2,260	1,800	2,400	2,400	29,180
% of Sales	15%	15%	20%	24%	14%	14%	15%	15%	18%	0
Income for Family	5,580	7,220	3,140	1,300	2,540	2,540	1,800	2,400	5,200	31,720
% of Sales	12%	26%	20%	8%	16%	16%	15%	15%	38%	18%
Cash in Hand	15,180	27,600	34,740	35,640	38,180	40,720	45,320	50,520	55,720	
A/Receivable	0	0	0	0	0	0	0	0	0	
Material Inventory	14,400	9,200	5,200	5,600	5,600	5,600	2,800	0	0	
Machine&Equipment	0	0	0	0	0	0	0	0	0	
Total	29,580	36,800	39,940	41,240	43,780	46,320	48,120	50,520	55,720	
A/Payable	0	0	0	0	0	0	0	0	0	
Loan from Bank	0	0	0	0	0	0	0	0	0	
Loan from Ohers	0	0	0	0	0	0	0	0	0	
Family Holdings	29,580	36,800	39,940	41,240	43,780	46,320	48,120	50,520	55,720	
% of Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	29,580	36,800	39,940	41,240	43,780	46,320	48,120	50,520	55,720	

Annex 8: Technical improvement in rice processing

Technical improvement in rice processing

1. Methods and/or equipment may be introduced to each step of rice processing

Technologies required to process rice are different from processing step by step. However, the rice millers participating to the pilot project apply only milling machine for multiple steps of rice processing. For example, they husk and polish parboiled paddy in one or two passes using single-pass rice mills. This method leads to intense abrasion of the rice-milling shafts and screens, causing high maintenance costs. The method also leads to produce mixture of rice bran and husk. Rice bran can be sold at a high price as it can be used as livestock feed and fish farming feed. However, bran is currently only used for fuel use because it contains husk, thus the by-products remain underused.

To address this situation appropriate types of equipment or method need to be applied to each step of rice processing. Table A8-1 presents recommended equipment and methods for each rice processing step.

Table A8-1 Methods and/or equipment may be introduced

Processing steps		Methods and/or equipment to be used
1	Drying	This process is one of the most difficult processes for rice millers because the paddy rice's moisture content is not easy to determine without measuring equipment. However, it has been experimented that by associating measurement and examination by hand approximate measurement is possible. By achieving uniform dry finishing, rice millers need to establish practical methods to measure moisture content or to introduce moisture measuring equipment.
2	Pre-cleaning	Pre-cleaner should be introduced to removes foreign substances such as straw dust, dirt, sand, stones, and metal before injecting the paddy rice into the husking machine. Introduction of this machine will also reduce machine breakdowns and abrasion, and millers can anticipate improvement in their work efficiency of 10% to 17%.
3	Husking	Husking machine which is exclusively used for husking paddy rice should be introduced to reduce the rate of broken rice grains. Mechanical efficiency can be expected to improve by around 13% to 17%.
4	Milling	Rice milling machine should be introduced to increase efficiency of milling process.
5	Polishing	Polishing machines improves removal of rice bran removal.
6	Rice grading	Rice grader should be used to remove broken rice grains, fine particles, and bran after milling to improve and equalize rice quality.
7	De-stoning	De-stoner should be used to remove sand and pebbles to improve rice quality.
8	Storing paddy and/or milled rice	Development of appropriate storing facility for paddy and milled rice enables rice miller to process larger quantity of paddy and milled rice. Such facility should be constructed to prevent damages during storage.
9	Weighing	Accurate weighing equipment should be introduced for fair deals, recovery analysis, and monitoring of losses.

2. High moisture content of milled rice

In August 2011 moisture content of 12 samples of milled rice was measured using an electrical resistance moisture content measurement device (Figure A8-1 and Figure A8-2). Among these

samples, only one sample showed appropriate moisture content of 14.0%. Three samples showed 17.2% to 19.3%, and the remaining eight were not measurable may be because of very high moisture content more than 20% (Figure A8-3). This illustrates fact that the quality of Kura rice is very poor. If the moisture content is high, milling is not performed properly and the degree of milling is low and uneven. On the other hand if paddy with moisture content around 14% is milled, the milling is even and quality of milled rice is high. Price of moist rice is lower by as much as 100 naira/mudu or more.

The pilot project experimented to associate moisture measurements by the moisture mater and manual measurement by touching milled rice. It was demonstrated that the felt hardness and moisture of milled rice with 14.0% moisture content could be recognised. In addition to introducing this manual judgement of rice moister content, Kura's undesirable habit of intentionally selling rice with high moisture content should be addressed and collected to improve market value of Kura rice.

Source: Project Team

Figure A8-1 Drying of milled rice with high moisture content

Source: Project Team

Figure A8-2 Measuring moisture content of rice

Moisture content 14.0% 17.5% May be higher than 20%

Source: Project Team

Figure A8-3 Moisture content and rice's appearance

Annex 9: 5S checklist

5S checklist

No.	Evaluation item	Check points	Evaluation point	Remarks
1	Dispose unnecessary items	No unnecessary item in the working area. (Unnecessary items in the work area are not using over one month)	2 1 0	
2	Keep cleaning tools at proper position	Cleaning tools are hanging at proper position in the working area.	2 1 0	
3	Clean the ground or floor	No dust and good-in-process on the ground of the working area. The floor or ground is swept and safety for passing without slip.	2 1 0	
4	Necessary notices on Bulletin Board (BB)	No out-of-date notice and/or document. No remaining paste on the board.	2 1 0	
5	No direct storage on the ground or floor	No direct storage on the ground or floor for raw material, spare parts, good-in-process, tools, documents.	2 1 0	
6	All Passages are secured	Machines, goods, and furniture are not block the passage. Not cross the flow line of both of the goods and staff	2 1 0	
7	Clean machines, facilities, and furniture	Not dirty machine, facilities, lockers, cabinets, desks, and chairs.	2 1 0	
8	Organize good-in-progress, stocks, and documents	Put wagons, racks, and cabinets straight-positioned.	2 1 0	
9	Organize tools and office supplies	Machines, facilities, spare-parts, and tools are organized to take easy in and out.	2 1 0	
10	Organize inside desks and racks	Inside desks, racks, cabinets, and rockers, all items are identified and organized.	2 1 0	
		Total point		

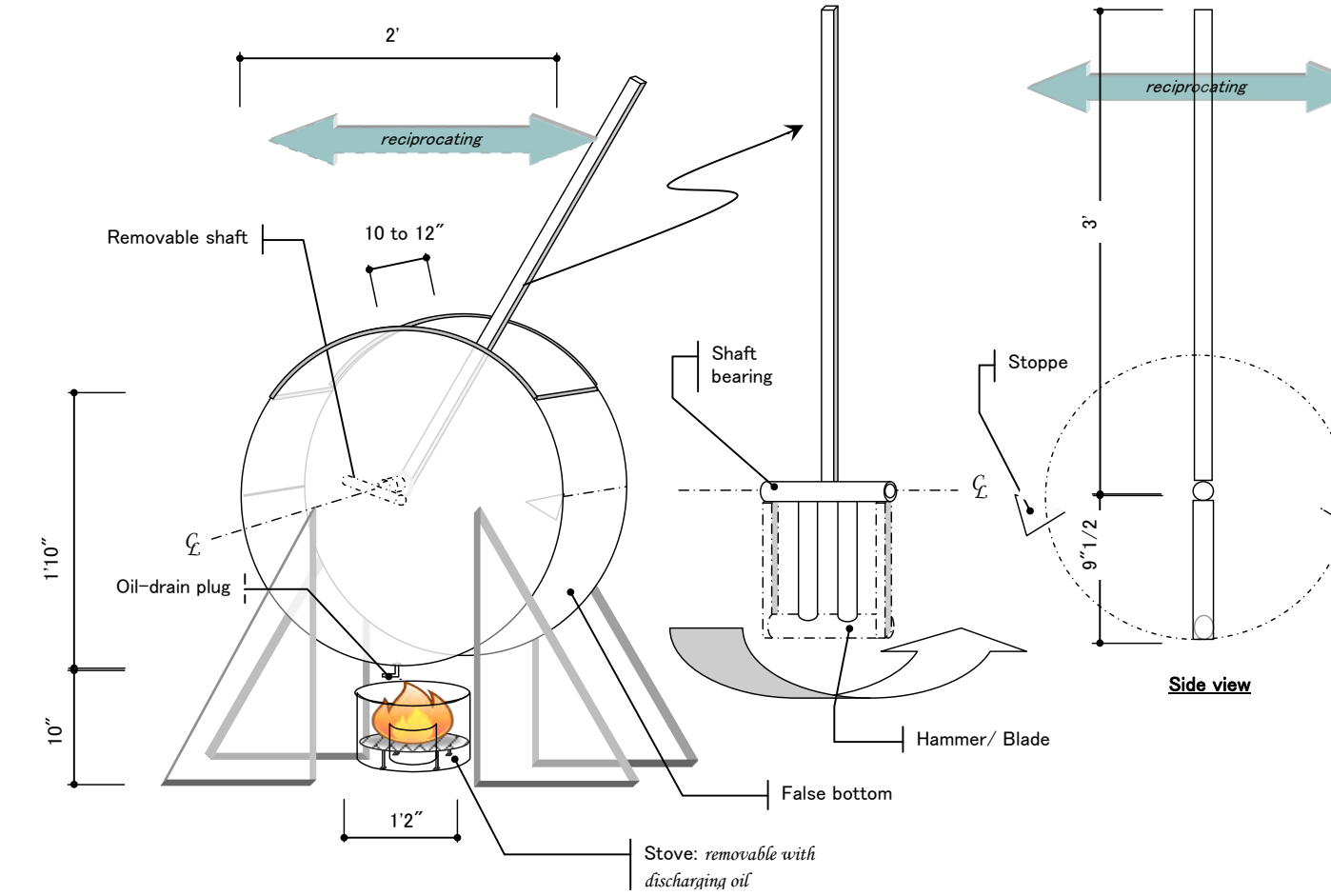
Annex 10: Improvement of manual oil extraction device

Design of manual oil extraction device

The manual oil extraction devise has been developed to reduce time and labour for oil extraction, and improve hygiene by not touching raw materials by hands. The devise is designed for women with little experience with machines to be able to handle easily. Figure A10-1 and Figure A10-2 show detailed design of the devise. Use of this devise enables processors to combine roasting and kneading into one continuous process to improve efficiency. A small stove is placed under the devise to protect processors against heat during oil extraction. This stove can be removed after heating of groundnut paste is finished. The bottom of the devise has a double-layered structure to prevent paste and oil from burning and sticking.

Oil extracting device

(Kanamoto model under JICA OLOP project, Counterpart agency: SMEDAN)



Source: Project Team

Figure A10-1 Design of oil extraction device

Source: Project Team

Figure A10-2 Oil extraction process with the device

Annex 11: Results of activities concerning manual oil extraction device and group purchase

Results of activities concerning manual oil extraction device and group purchase

Kneading is the most time- and labour-consuming of the working processes of traditional oil extraction, and it is the most important process as it determines the oil extraction volume and quality of the product. Many processors used to outsource this very process, and they were facing various problems, including high outsourcing costs, production stoppages when machines at outsources stop operating due to blackouts, and difficulty in adjusting quality and production volume.

A manual oil extraction devise was introduced to the processors. After trial operation at the project site, the processors came to understand easiness and effectiveness of the extraction devise. Two units of the devise were purchased by the processors. The extraction devise has brought substantial merits, such as increased extraction effect, reduced extraction time, reduced labour, and improved quality.

Sales of oil do not cover the material cost, and sales of *kuli-kuli* help ensure profits. The profit ratio was around 20% before introduction of the extraction devise due to multiple factors including distribution channels and sales prices of *kuli-kuli* and high outsourcing cost. be sold at wholesale prices. Introduction of the extraction devise has improved profits by cutting the outsourcing cost. In addition, all the processors increased their sales of *kuli-kuli* in the market in order to increase profits. As a result, the profit ratio has improved as shown in Table A11-1.

Table A11-1 Recovery and profit ratio in groundnut oil processing

Item/ratio		Calculation	Date（2011）						
			14-Jan	19-Feb	3-Jun	3-Jun	3-Jul	8-Jul	21-Jul
Material	kg	(1)	14.5	14.0	28.0	28.0	13.7	13.9	13.8
Kuli-kuli	kg	(2)	10.8	10.7	22.0	22.5	10.6	11.8	12.3
Oil	kg	(3)	3.1	3.0	6.4	6.9	3.6	3.7	3.6
Oil/Material		(3)/(1)	21.4%	21.4%	22.9%	24.6%	26.3%	26.6%	26.1%
Kuli-kuli/Material		(2)/(1)	74.5%	76.4%	78.6%	80.4%	77.4%	84.9%	89.1%
Cost of material	NGN	(4)	1,856	2,198	4,508	4,508	2,493	2,502	2,401
Sales of oil	NGN	(5)	1,363	1,648	3,516	3,640	2,033	2,033	1,978
Sales of oil and *kuli-kuli*	NGN	(6)	3,763	4,448	7,916	7,840	3,728	6,833	6,678
Profit	NGN	(7)	1,327	1,678	2,408	2,572	1,015	3,871	3,877
Profit Ratio		(7)/(6)	35.3%	37.7%	30.4%	32.8%	27.2%	56.7%	58.1%

Source: Project Team

The processors aimed to reduce costs and improve profitability by introducing group purchase of materials. During the pilot project, the processors conducted group purchasing 21 times in total as shown in Table A11-2. The pilot project monitored four processors participating in the group purchase to obtain data summarized in the table. The processors understood that they could procure raw materials at lower prices than they used to pay individually.

In November 2010, when the pilot project started, the purchased amount was 67 mudu (about 100kg). In July 2011, it was increased to 500 mudu (about 800kg). The frequency of purchase also increased to as often as once a week. Groundnut prices have plateaued since June 2011, and market demand for groundnut oil and its by-product *kuli-kuli* as fertilizer has expanded, which may have contributed increase in amount and frequency of group purchase. Better understanding about the merit as they repeat group purchase may have been another factor.

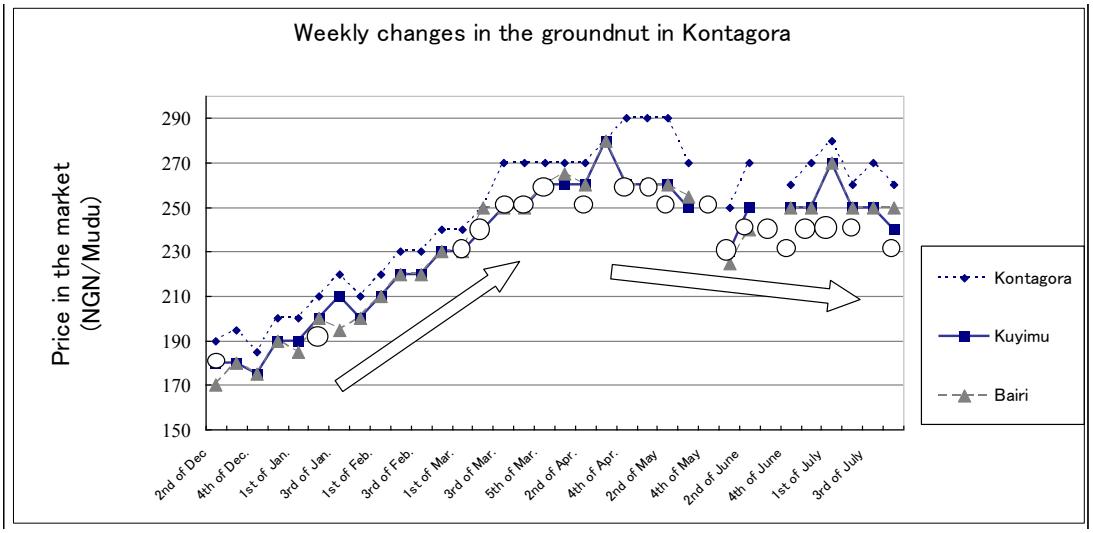
The processors visited markets to find the most reasonable price for the materials. Gathering market information every week made them understand monthly changes in prices as well as long- and medium-term changes. This information is expected to help them planning for groundnut procurement and groundnut oil marketing in the future.

Table A11-2 Results of the group purchase of groundnut

No.	Date of purchase	Week of month	Purchased amount (NGN)	Purchased volume*1 (mudu)	Unit price (NGN/ mudu)	Other cost *2 (NGN)	Unit price including other costs (NGN/ mudu)
			a	b	c=a/b	d	e=(a+d)/b
1	2010/11/27	4th of Nov	11,390	67	170	300	174.5
2	2010/12/08	2nd of Dec	12,600	70	180	200	182.9
3	2011/01/12	2nd of Jan	28,500	150	190	250	191.7
4	2011/03/02	1st of Mar	46,000	200	230	400	232
5	2011/03/09	2nd of Mar	60,000	250	240	500	242
6	2011/03/16	3rd of Mar	50,000	200	250	400	252
7	2011/03/25	4th of Mar	50,000	200	250	500	252.5
8	2011/04/01	5th of Mar	52,000	200	260	400	262
9	2011/04/12	2nd of Apr	50,000	200	250	400	252
10	2011/04/25	4th of Apr	52,000	200	260	500	262.5
11	2011/05/04	1st of May	65,000	250	260	500	262
12	2011/05/12	2nd of May	75,000	300	250	900	253
13	2011/05/23	4th of May	75,000	300	250	500	251.7
14	2011/06/01	1st of June	115,000	500	230	400	230.8
15	2011/06/11	2nd of June	96,000	400	240	600	241.5
16	2011/06/16	3rd of June	96,000	400	240	600	241.5
17	2011/06/22	4th of June	115,000	500	230	800	231.6
18	2011/06/30	5th of June	72,000	300	240	500	241.7
19	2011/07/06	1st of July	96,000	400	240	600	241.5
20	2011/07/12	2nd of July	48,000	200	240	500	242.5
21	2011/07/27	4th of July	115,000	500	230	400	230.8

Note: 1) One mudu in Niger State is about 1.6 kg; 2) Other costs include transportation, tax, and handling costs.
Source: Project Team

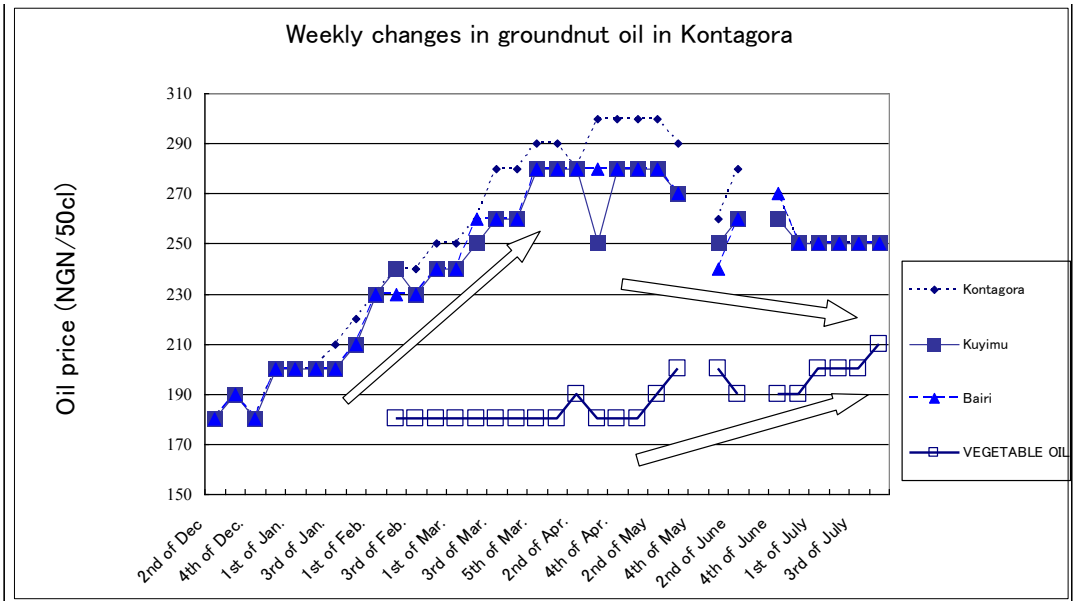
Figure A11-1 shows that the groundnut price was rising since December 2010, when the market price survey was started, until around the end of April 2011 when it plateaued at this peak, and since then has declined slightly to the end of July. It is said that the price usually continues to decline from August through December. Among three markets, prices are always higher in Kontangora than in the other places, probably because Kontangora is an urban market while the others are rural markets. Timing and prices of group purchases were indicated by the symbol "○." In the first half of the period, groundnuts were purchased at prices as low as those at Kuyimu and Bairi; while from May 2011, they were purchased at prices even lower than those at Kuyimu and Bairi: 10 naira lower than those prices. Since the processors always procured groundnuts at Kuyimu market later in the period, frequency and volume of their purchases contribute to lowering the prices, demonstrating the merits of group purchasing.



Note: Timing of group purchase is indicated by "○"
Source: Project Team

Figure A11-1 Weekly changes in the market price of groundnuts and group purchase

Figure A11-2 shows weekly changes in the market price of groundnut oil. As is the case with groundnut prices, groundnut oil prices also rose until around the end of April, plateaued at this peak, and then slightly declined. Comparing groundnut oil prices with vegetable oil prices, the former is more expensive than the latter at the end of July, and it is expected that this relationship usually reverses in September. The Technical Cooperation Team hopes that the produces will make use of these findings to plan marketing of groundnut oil.



Source: Project Team

Figure A11-2 Weekly changes in the market price of groundnut oil

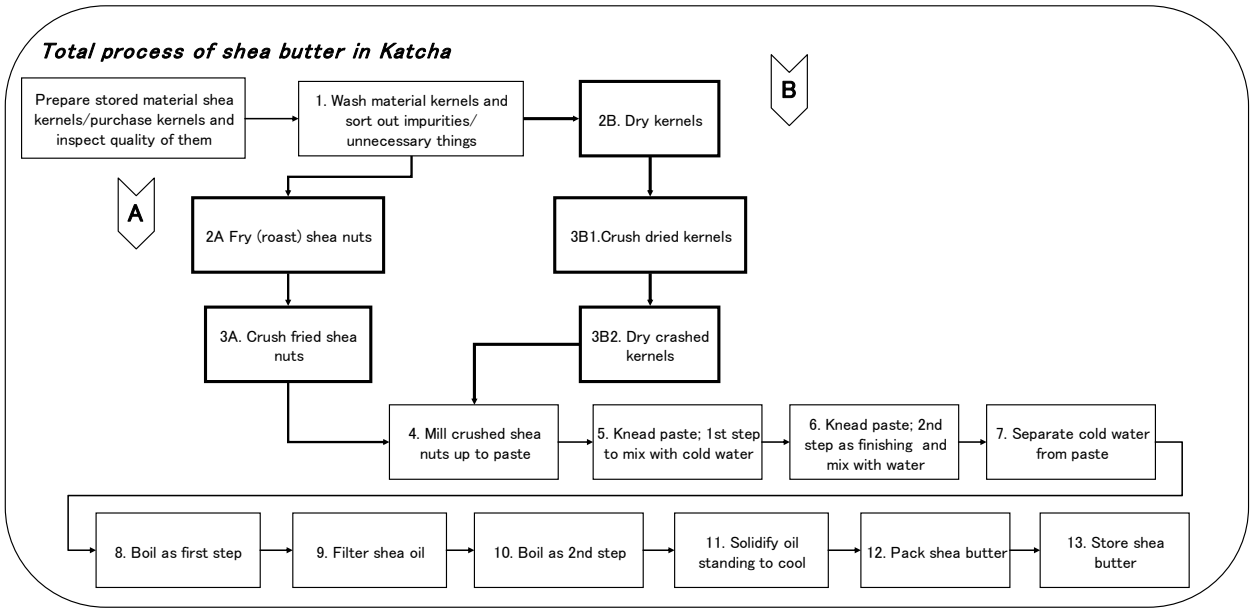
Annex 12: Method of improving shea butter processing

1. Manufacturing process of shea butter

Traditional processors always accept the offered prices, as they have no means to evaluate the quality of the shea butter they have produced. On the other hand, buyers purchase shea butter at relatively high prices, even from traditional processors, if the quality is high. The pilot project provided support to the processors to improve quality of their products so that they can sell more shea butter at higher prices and strengthen relationship with buyers. The pilot project analysed manufacturing process of shea butter in such aspects as types of work, tools used, working hours, work environment, and the difference in processes among processors to find out what factors determined shea butter quality among these processors. It was also analysed which part of the process determined the amount of Free Fatty Acid (FFA) that influenced shea butter quality.

It has been revealed through implementation of the pilot project that traditional shea butter processors purchase shea kernel raw material quite often. In the off-season, they buy shea kernel raw material on a steady basis; and even during the busy season (July to September), they rarely gather Shea nuts by themselves for use as shea kernel material, but instead purchase it for processing into shea butter. Processing and conditioning kernel material and production of shea butter are separate processes. Villages located near major roads tend to undertake shea butter production, while villages located several kilometres away from major roads process and condition the kernel material. In the villages located in-between, villagers process and condition kernel material by themselves and produce shea butter for their own consumption.

Figure A12-1 shows a typical processing method of shea butter used at traditional villages. Method A shows the method widely adopted in this region, in which smoked shea nuts are used and kernel material is fried with the husks removed. Method B shows another method recommended by GIZ, in which parboiled nuts are used and the kernel material (with husks removed) is repeatedly sun-dried. The pilot project studied the manufacturing process according to the steps indicated in the figure.



Source: Project Team

Figure A12-1 Typical manufacturing process of shea butter

Basic policies for studying the manufacturing process are as follows:

- Find out the best method that suits the work environment in the village in question.
- Limit the scope of study not to include processing of shea nut raw material.
- Use a simple test kit to monitor FFA.
- Suggest improved but costly methods to be adopted in the future when profits are increased.

The quality of the processed shea butter was analysed at the Federal University of Technology (FUT) with particular attention to FFA content. It was found, at several processing steps, that the shorter working hours the lower the FFA values. However, determining grades was difficult because samples were too small. In the future, capacity of FUT should be improved to deliver more accurate test results, or there should be another institution that can perform a reliable analysis.

Table A12-2 shows the details of the tasks at each step of each shea butter manufacturing process and suggestions to reduce FFA content and the percentage of unwanted matters.

Table A12-1 Shea butter manufacture process and suggestions to reduce FFA

Step ID and Step		Process and suggestions to reduce FFA
1	Rinsing shea nut raw material with water and removing unwanted matters	Before the study was conducted, shea kernel raw material had rarely been rinsed with water each time shea butter was processed. During the rinsing process and the following drying process, large-size unwanted matters were removed. Drying is a very important process that prevents the mixing in of unwanted matters into the shea butter manufacturing process.
2A	Frying shea kernel raw material	The purpose of frying is to decrease moisture content so that nuts are crushed evenly in the next process, and to prevent nut past from sticking to the blade (hummer) part of the crushers. Before frying, nuts are divided into two or three batches according to size because frying time varies depending on the size. While sorting nuts, sprouting ones should carefully be removed so as to avoid producing high FFA. Residual oil and used oil are used for frying, which probably affect quality. Oil of grade 2 or 3 with FFA contest below 4% is desirable to keep FFA low.
3A	Crushing fried shea nuts	Shea nut raw material is then crushed into several millimetres or smaller, and processed into a homogenous paste during the next grinding process. In Emiworo village, a crusher is used; in Egbanasara village, a traditional mortar and pestle are used. Tools such as brushes can be used to reduce the volume of oil used to rinse inside crushers.
2B	Drying shea kernel raw material	The shea kernel should be adequately dried to make the following processes efficient. By reducing moisture content, milling and kneading processes become more efficient. When milled with high moisture content, shea kernel sometimes doesn't become pasty. In such a case, the kneading process takes more time and yield is lower.
3B1	Crushing shea kernel raw material	Product oil is not used for rinsing the inside of the crushers. Brushes and cloths should be used for this purpose.
3B2	Drying	Sun-drying is continued for another two hours. Material should be dried adequately to make the following process more efficient.
4	Grinding crushed shea kernels until they become pasty	After being crushed, the material is milled by a milling machine to become pasty. As it is hot just after being milled, the manual kneading process cannot start immediately. While cooling down, it should be ensured that dust or other unwanted matters does not mix into the paste. The paste is then put into a clean container.
5	First step of manual	Depending on the condition (hardness) of the paste, water or hot water is added to the paste to make it softer, and manual kneading is begun. Usually 2-5 litres

Step ID and Step		Process and suggestions to reduce FFA
	kneading: Adding water or hot water and performing kneading by hand	of water are added. While manual kneading is proceeding, partly influenced by the added moisture content, oil oozes out little by little. At the end of the first step, the colour of the paste changes from dark brown to pale brown, signalling the end of this process. If this process takes for a long time, FFA may increase. It is necessary to prepare replacement workers for manual kneading so that kneading time is not prolonged. Containers used for manual kneading should be clean.
6	Second step of manual kneading: Kneading by hand until the oil comes out, and adding water	Depending on the condition (hardness) of the paste, the kneading process is continued. As kneading progresses, substantial oil oozes out. At the end of the second process, the colour of the paste changes from pale brown to a milkier colour. When sprinkling more water on the paste, oil oozes out onto the surface and takes on a shiny white appearance. The kneading process is over when almost all the paste takes on this appearance. Then, more water is added. The paste contains a great deal of oil oozes out of the water, and about half of the impure substances are dissolved into the water. Workers' movement during the entire process of kneading differs from worker to worker. Thus the function and effectiveness of the manual kneading process has not been fully clarified.
7	Separating paste from water	Paste floating on the water is then scooped out with both hands, and moved to a pot or bowl. Oil (small pasty masses) spreading on the surface of the water is gathered to one corner of the container by rippling water surface by hand so that all of the paste is scooped out. The remaining water is then discharged, and the container is rinsed. Then, clean water is poured into the container and the gathered paste is returned to the container and lightly stirred so that any residual impure substances are removed as much as possible. The second separation work is carried out in the same way as in the first step. The lower the temperature of the water used, the easier the separation work. Water from the second separation work is often used for the first separation work of the next round. Reuse of water should be avoided if the water temperature is high or the water is substantially dirty.
8	Boiling paste: The first step is to refine the paste to make shea oil.	The purpose of this step is to make shea oil by refining paste. First, the paste is put into a pot and boiled over high heat. When the temperature reaches around 90°C, the paste melts completely. As numerous bubbles are generated at this point, the volume of the paste put into the pot should be less than half to prevent boiling over. In 20-30 minutes, oil is extracted out of the paste, and residue begins to gradually sink to the bottom of the pot. Oil should be stirred well to prevent burning. With substantial moisture content remaining in the pot, water vigorously evaporates during this process. When all the moisture content is gone, the temperature of the boiling oil exceeds 100°C. At around 130-150°C, all residue will sink to the bottom of the pot. The production of shea oil is then complete. Carefully cleaned pots should be used for boiling. It should be avoided for char from the previous process to get into the paste. Fire should be started before the paste is put into the pot to keep working hours as short as possible. Swiftness and adequate stirring are important. Burning the bottom and side of the pot should be avoided. During this process, light residue and scum float on the surface due to convection flow. As these are high in FFA content, it is better to scoop them out using net or a dipper. This process should be finished while the colour of residue remains brown. In order to ensure a higher yield ratio, it seems to be better to shorten boiling time.
9	Filtering shea oil	The pot is then taken off the heat source and allowed to cool down a bit, and the clear upper portion of the butter is scooped out using a small bowl. It is then poured onto the filter. A clean container is placed under the filter to receive the oil. In many cases, the filter is made of chemical fibre fabric, which is easy to wash after being used. Oil soaked in the residue should not be mixed with the

Step ID and Step		Process and suggestions to reduce FFA
		product, and should be used for other purposes such as oil for frying. The material of the filter is very fine as it is a type of fabric used for women's shawls. When the filter is layered eightfold, the mixing in of visible unwanted matters can be prevented. It is necessary to develop and apply filter holders.
10	Boiling shea oil: The second step	The purpose of this step is to remove moisture content, but this second step is often omitted. For boiling, a fully washed pot should be used. After this process, it is best to filter the product. The pots used for this process should be cleaned on the same day, in preparation for the following processes.
11	Cooling naturally and solidifying the oil (shea butter)	Oil is solidified by natural cooling. In many cases, it is cooled in sales containers. While oil is being cooled, attention should be paid so that dust and other unwanted matters are not mixed in. It is convenient to cool the oil in plastic bags.
12	Packing shea butter	In many cases, shea butter is cooled in second-hand containers with the capacity of 20 kg that were previously used for paints. As mentioned above, cleaned containers or plastic bags should be used.
13	Storing shea butter	Shea butter is stored in a cool and dark place. It is difficult to keep the storing temperature low. However, in order to prevent contact with air, containers should always be sealed firmly and stored in a condition free from ultraviolet light.

Source: Project Team

2. Processing time and FFA

The Technical Cooperation Team studied relation between processing time and FFA. Table A12-2 presents FFA value and processing time of shea butter samples manufactured in two villages: Emiworo and Egbanasara. Table A12-3 summarises correlation between shea butter samples and processing time.

Table A12-2 FFA and processing time

FFA %	Processing time			
	Total	Frying	Kneading	Boiling
Emiworo				
2.31	159	50	35	74
6.36	290	52	138	100
2.31	177.5	42.5	47	88
10.98	309	69	120	120
4.04	244	120	50	74
3.32	170	35	55	80
3.50	193.5	57.5	26	110
3.87	226	57.5	68.5	100
2.21	173	33	70	70
3.54	132.9	32.5	43.4	57
Egbanasara				
2.89	125	25	55	45
5.78	164	50	57	57
6.36	211	65	77	69
1.27	117	24	39	54
3.48	162	48	51	63
6.36	179	46	70	63

Source: Project Team

Table A12-3 Correlation coefficient between FFA and processing time

Correlation coefficient	Total	Frying	Kneading	Boiling
Entire	0.7474	0.3912	0.7452	0.4655
Emiworo	0.8372	0.2989	0.7613	0.6666
Egbanasara	0.8893	0.8384	0.9003	0.6447

Source: Project Team

The analysis yielded the following results:
The Shea kernel frying process does not seem to have a strong correlation with the FFA value. It is difficult to see any particular tendency because there are factors other than processing time such as the level of heat and the amount of frying oil in the product.
In the kneading process, there is a strong correlation between longer processing times and higher FFA values; probably because there is more opportunity for the product to come into contact with the air (oxygen).
In the boiling process, too, there is some correlation between longer processing time and higher FFA values, though in this case the correlation is not strong. It may be advisable to keep the heating time short because during the boiling process, there is more opportunity for the product to come into contact with oxygen and for unwanted matter attached to the surface of the pot to contaminate the product.
Products with FFA vale of 3% or less were produced with special care in order to achieve high quality. It was found that without using parboiled kernel raw material, shea butter of SON Grade 2 can be produced by reducing the working time at each process and preventing unwanted matter from contaminating the products.

3. FFA test kit

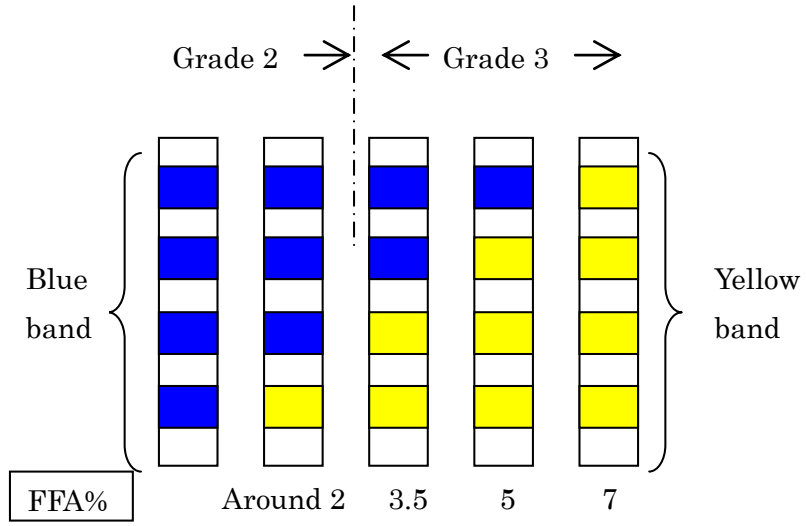
Two types of FFA-checking test kits (normal range and low range) were used to check FFA value of shea butter samples in the two villages. Laboratory analyses of shea butter and results of the FFA measurements using the test kit are shown in Table A12-4. The normal-range test kit (FFA2-7) was better than the long-range test kit (FFA1-2.5) to discern changes in colours and differentiate between Grade 2 and Grade 3. The colours of the normal-range test kit are shown in Figure A12-2. Therefore, the normal-range test kit was adopted, and a usage manual was prepared.

Table A12-4 FFA value by laboratory analysis and test kit

Source: Project Team

Sample	Lab analysis	Test kit			Grade
		Normal range	Low range	Remarks	
A	1.28	2−3.5	1−1.5−2	At low range, difficult to determine.	2
B	2.63	2−3.5	2.5−		2
C	1.96	2−3.5− 5	?	At Low range, difficult to determine.	2 or 3
D	2.99	2−3.5−5	2.5−		2 or 3
E	1.46	2−3.5	2−2.5		2
F	2.82	2−3.5−5	2.5−		2 or 3
G	1.75	2−3.5	1.5−2−2.5	At low range, difficult to determine.L	2
H	2.32	2−3.5	2.5−		2
I	7.53	7−	2.5−		3
J	2.63	2−3.5−5	2.5−		2 or 3

Note 1: Lab analyses are the result of a titlation by the FUT; test kits are products from 3M (detection range is 2−7 at normal range and 1−2.5 at low range).
Note 2: According to Nigerian standards, grade 1: FFA 1.0 or lower; grade 2: FFA 1–3; grade 3: FFA 3–8.
Source: Project Team



Source: Project Team

Figure A12-2 Test kid reaction

Niger State Commodity and Export Promotion Agency (NSCEPA) organised a shea butter workshop inviting traditional shea butter processors and shea products traders. At the workshop, shea butter processed by the traditional processors was checked with the test kit to prove its quality of Grade 2 or better. The invited traders, who saw the test kit for the first time, must have been interested in the kit with which they could carry out on-site checks of FFA values.

To encourage the broad use of the test kit, price is an important factor. When procured from manufacturer's agents in South Africa and Lagos, it cost about 300 naira per sheet including delivery cost. It is necessary to examine the possibility of purchasing test kits at lower prices by bulk purchasing.

Annex 13: Design and specification yam storing shelf

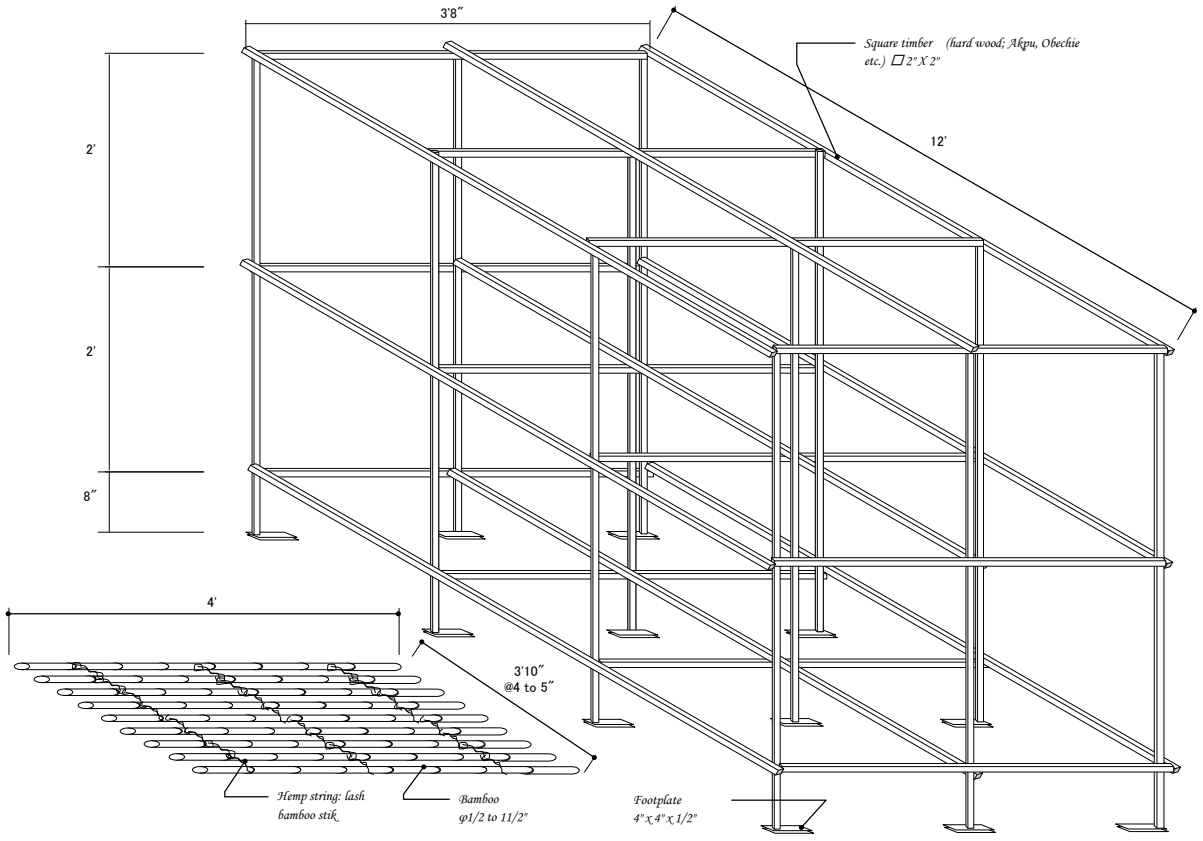
Design and specification yam storing shelf

Figure A13-1 and Table A13-1 show design and cost of single yam storing shelf. Fabrication of a yam storing shelf costs approximately 18,500 which can be reduced by bulk order. Suggestions regarding fabrication of yam storing shelf are:

- Wait 6 month to dry fabricated wood before varnish
- Using bamboo mats for good air circulation
- Fabricate 3 layers of shelf for efficient use of storing area
- Minimise the use of nails

Suggestions regarding warehouse where yam storing shelves will be placed are:

- Provide openings in warehouse for ventilation
- Dig drainage channel in the warehouse to avoid water logging
- Keep one foot gap to warehouse ceiling for good air circulation
- Designed load is up to 4,000kg/shelf



Source: Project Team

Figure A13-1 Design of yam storing shelf

Table A13-1 Costs of materials and fabrication work for one yam storing shelf

	Item	Unit price (NGN)	Quantity	Total (NGN)
1	Bamboo	165	25	4,125
2	2×2×12 feet wood	160	21	3,360
3	Delivery cost of wood and bamboo	600	1 time	600
4	4 inch nail	120	2 pounds	240
5	3 inch nail	100	2 pound	200
6	Bracket	250	10	2,500
7	Screws for bracket	3	120	360
8	Carpentry work (bracket instalment)	4,000	1	4,000
9	Bamboo work	2,000	1 set	2,000
10	Drill bit	50	2	100
11	Strings for bamboo work	500	2 bundles	1,000
Total (NGN)				18,485

Source: Project Team