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SHEA PRODUCT DEVELOPMENT PLAN IN GUINEA

PRELIMINARY REPORT (#03)

AGRICULTURAL MARKET LINKAGE ACTIVITY

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Guinea Agricultural Market Linkage Activity

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ACRONYMS

ACA	Agence pour la Commercialisation Agricole [Agency for Agricultural Commercialization]
CIDA	Canadian International Development Agency
ACM	Association de Caution Mutuelle [Mutual Insurance Association]
ADIC	Association d'Appui au Développement des Initiatives Communautaires [Association to Support the Development of Community Initiatives]
AFD	French Development Agency
AGFC	Guinéenne des Femmes Chercheurs [Guinea Association of Female Researchers]
FFA	free fatty acids
AGOA	African Growth and Opportunity Act
ARCA	Agricultural Market Linkage Activity
ATC	Action Transformation Commercialisation
CAFEX	Center for Export Formalities
CAG	Guinea Chamber of Agriculture
CBE	cocoa butter equivalent
CBI	cocoa butter improver
CCI	Centre Commerce International [International Commerce Center]
GCCIC	Guinea Chamber of Commerce, Industry and Crafts
CDR	Communauté Rurale de Développement [Rural Development Community]
CECI	Canadian Centre for International Studies and Cooperation
ECOWAS	Economic Community of West African States
CIAC	Centre d'écoute et d'Information Agricole et Commerciale [Agricultural and Commercial Receiving and Information Center]
CIEPEX	Centre International d'Echanges et de Promotion des Exportations [International Center for Exchange and Promotion of Exports]
CIF	cost insurance and freight
CNOP-G	Conseil National des Organisations Paysannes de Guinée [National Council of Rural Guinean Organizations]
CNPG	Conseil National du Patronat Guinéen [Guinean National Council of Employers]

CNRA	Centre National de Recherche Agronomique à Korogo [National Agricultural Research Center in Korogo]
UNCTAD	United Nations Conference on Trade and Development
COLUFIFA	Comité de Lutte pour la Fin de la Faim [Committee for Ending Hunger]
CPTI	Centre de Promotion et de Technologie Industrielle [Industrial Technology Promotion Center]
CRD	Communauté Rurale de Développement [Rural Community Development]
PRSP	Poverty Reduction Strategy Paper
EDIC	Etude Diagnostique de l'Intégration Commerciale [Diagnostic Study on Trade Integration]
FAO	Food and Agriculture Organization of the United Nations
GNF	Guinean Franc
FOB	Free On Bord (Incoterms)
GAMLA	Guinea Agricultural Market Linkages Activity
GMK	Groupement des Meuniers de Kankan [Kankan Millers Group]
GTZ	German Agency for Technical Cooperation
ICRAF	International Council for Research in Agroforestry
INNM	Institut National de Normalisation et de Métrologie [National Institute of Standards and Measurement]
IRAG	Institut de Recherche Agronomique de Guinée [Guinea Institute of Agricultural Research]
LPDA	Lettre de Politique de Développement Agricole [Policy Letter on Agricultural Development]
MAROPA	Maison Régionale des Organisations Professionnelles Paysannes [Regional Society of Professional Rural Organizations]
MGE	Maison Guinéenne de l'Entreprise [Guinea Business Firm]
NG	Norme Guinéenne [Guinean Standard]
OCPH	Organisation Catholique pour la Promotion Humaine [Catholic Organization for Human Promotion]
MDG	Millennium Development Goals
NGO	Non-governmental organization
UNIDO	United Nations Industrial Development Organization
OPIP	Office de Promotion des Investissements Privés [Office of Private Investment Promotion]
PAFN	Plan d'Action Forestier National [National Forestry Action Program]
WFP	World Food Program

PCGED	Programme Cadre Genre et Développement [Gender and Development Framework Program]
PDP	product development plan
PEGRN	Projet Elargi de Gestion des Ressources Naturelles [Expanded Natural Resource Management Activity]
PNAE	Programme National d'Action Environnementale [National Environmental Action Plan]
UNDP	United Nations Development Program
HIPC	heavily indebted poor countries
PROKARITE	Projet Karité [Shea Project]
PTF	plate-forme multi fonctionnelle [multifunctional platform]
SIG	système d'information géographique [geographic information systems]
SIM	système d'information de marché [market information system]
SNCQ	Service National de Contrôle de Qualité [National Quality Control Service]
SPCIA	Société de Production et de Commercialisation des Intrants Agricoles [Agricultural Production and Marketing Company]
SRR	Rapid Rural Relief
SWOT	strengths, weaknesses, opportunities, and threats
UCM	Union des Coopératives Maraîchères [Union of Market Garden Cooperatives]
EU	European Union
WAEMU	West African Economic and Monetary Union
UNIFEM	United Nations Development Fund for Women
US\$	U.S. dollar
USAID	United States Agency for International Development
WATH	West African Trade Hub

EXECUTIVE SUMMARY

This development plan for shea in Guinea is the culmination of the preliminary work of the ARCA (Agricultural Market Linkage Activity) project funded by USAID and executed by Chemonics International Inc. in this sector. The principal purpose of the plan is to propose operational methods and solutions for implementing strategies (in particular, the promotion of agricultural sectors suitable for export) that are consistent with the current commercial and economic development policies in the country.

The analyses and proposed roadmap are intended for agricultural and commercial policy decision-makers, groups that support the socio-economic development of the country, shea market operators, financial institutions, investors, international wholesalers involved in the tropical products market, shea producers, and core female producers in the villages of Haute Guinea — the principal production region.

The current situation is characterized by:

- Irregular quality and insufficient supply, which disallow seeking market segments for export
- Rudimentary and laborious processing processes carried out by female producers in the villages of Haute and Moyenne Guinea
- Unpredictable commercialization practices based on the collection of a very fragmented and mixed supply
- Limited financial means to support medium- and long-term investments and create more added value in equipment, working capital, or strengthening human resources capacity
- Unsuitability of the policies on allocating financial and technical support resources, compared with the development objectives

Despite a number of factors that limit the current performance of the sector, the local, sub-regional, and international markets present real commercial opportunities. Guinea can create more favorable conditions for increasing the profitability of exploiting shea resources. The solutions presented here are designed to better channel the support for management and development and optimize use of shea resources, given the current market.

This development plan proposes acting on several aspects of commercial competitiveness, with a mind toward the parties along the shea value chain. As the true bearers of the project, these parties (female producers, wholesalers, partners in the development, consumers) are considered jointly. The plan specifies an organizational context through mechanisms that promote reliable production in almonds and shea butter. The plan aims to indicate the path toward improving product quality, increasing productivity, and taking advantage of new market opportunities.

INTRODUCTION

Shea almonds are a source of fat consumed in various forms in the majority of West African countries. Since the colonial period, almonds and butter have been exported to France for chemical and dietary uses. Butter and shea almonds present significant commercial opportunities that the Guinean sector could claim. Butter is currently sought for various applications in the food, cosmetics, pharmaceutical, and paracheimical industries. Its diverse applications create high demand in European, North American and Japanese markets. WATH (West African Trade Hub) estimates that these markets import 150,000 tons of almonds, or approximately 85 to 90 percent of the total demand for shea on the international market. The remainder (10 to 15 percent) is used in the form of butter.

For the directly involved value chain parties — female producers, wholesalers, and exporters — the main issues will be to gain market shares and maintaining a favorable quality-price ratio. Rural female producers in particular could benefit most from an increased income. They are the most vulnerable to poverty, and in the current state of the sector, they are the most disadvantaged in the distribution of added value. As in other producer countries, primary production is dominated by the village system and almost completely by rural women.

The recent interventions of some projects in the shea sector in Guinea made it possible to begin collecting data in Haute Guinea. The assessment of the sector and identification of the major constraints were the subject of several studies, which indicated the need to establish a strategic development plan.

The ARCA (Agricultural Market Linkage Activity) Project initiative falls under this sphere of influence, and Chemonics International staff prepared a development plan. Assessment studies were carried out to identify the opportunities in the short term and medium term. Among the opportunities to consider to determine well-targeted interventions, the following are taken:

- Domestic and international markets with large and growing demands
- Improved status of the target beneficiaries — mostly rural women, for whom a large percentage annual income comes from the export of shea
- Promotion of exports that can contribute to the growth of government receipts
- Improved competitiveness of the supply networks by strengthening technical and commercial capacities

This document is structured into five parts: A description of the context; an examination of the opportunities for interventions along the shea value chain; an analysis of the value chain and identification of the principal organizations supporting agro-business; a SWOT analysis to assess the chances of Guinea's commercial success, through factors that positively or negatively influence its competitiveness, and based on this assessment, to be able to seize the intervention opportunities; and a proposed shea development plan that will present the essential and interconnected actions to be implemented. Finally, a conclusion is presented along with recommendations on some operational methods of the implementation of this Shea Product Development Plan.

METHODOLOGY

The goal of this mission is to establish a Shea Product Development Plan (PDP) that aims to improve competitiveness of products and increase production volumes and effective commercialization in the exportation of shea butter and almonds. To carry out this mission, staff performed research, surveys, and interviews of partners and the parties involved directly and indirectly in the shea sector.

The following studies, conducted by the ARCA project, were the documentary basis for the development plan.

- Study on the picking and processing of shea in Guinea, August 2005
- Analysis of the competitiveness of the picking and processing of shea in Guinea, October 2005
- Analysis of four investment variants for shea butter production in Guinea, January 2006
- Research on the availability of the packaging of shea butter for commercialization, January 2006
- Export market for shea butter and nuts in Guinea, February 2006
- Production techniques for almonds and the extraction of unrefined shea butter, March 2006

Geographically, the principal production areas (Kankan, Mandiana, Siguiri, and Kouroussa Prefectures) were visited to obtain the primary information from the parties involved. See Appendix 3 for the list of people met and the phases of the mission.

- Producer groups (equipped and unequipped, trained and untrained)
- Public markets of the areas
- Production and production equipment maintenance areas
- Shea processing centers (in urban and rural areas, belonging to groups and private individuals)
- Butter storage and commercialization stores in the local markets

In these different areas, staff observed the methods of exploiting resources, work conditions of the female producers, and their modes of social organization. In nearby markets, staff examined the quality and packaging of the products, storage conditions, volumes of product inventories, prices in effect, primary distribution systems, and estimates on commercial expenses.

Staff met with administrative divisions, private organizations, NGOs interested in the sector, and potential vendors of goods and services necessary to the development of the sector. Staff also interviewed the sector's existing vendors, equipment manufacturers, repair technicians,

financial services representatives, and trainers. Staff scrutinized the areas of cooperation and synergy of these different parties involved in the development of shea.

Engineer and economist Arsène Diasso Koïvogui and agri-food industries engineer Amadou Sylla were the consultants selected by ARCA-Guinea to produce this report. The report is a framework and orientation manual and is intended for use by all parties involved in the sector, including governments and technical cooperation organizations (international, bilateral, and NGOs).

CONTEXT

In order to improve Guinea's economic return, the reforms underway use strategies that prioritize the agricultural sector and sustainable exploitation of natural resources. The strategies focus on food security, poverty reduction, and protection of environmental resources.

In Haute Guinea, the principal shea production region, programs and projects address the following key areas:

- Strengthening capacity of producers and the structure of rural organizations
- Encouraging diversification in production and sources of income
- Supporting more efficient commercialization of farm yields and use of the natural resources by small rural farmers
- Providing access to improved technology
- Aiding commerce through development of transportation and communication infrastructures
- Improving access to and sustainable management of natural resources

ABOUT THE REPUBLIC OF GUINEA

The Republic of Guinea is a coastal country, located in the western part of the African continent. It shares borders with six countries: Guinea-Bissau and Senegal to the north; Mali to the northeast, Côte d'Ivoire to the east and southeast, and Liberia and Sierra Leone to the south. Conakry is an active, 300-kilometer-wide port on the Atlantic Ocean.

With a total area of 245,857 square kilometers, the dominant climate is hot and humid tropical, characterized by two seasons: a rainy season from May to October and a dry season from November to April, with durations varying by region. Guinea has adopted administrative subdivisions by dividing the country four natural regions: Basse Guinea (coastal region, 18 percent), Moyenne Guinea (mountain region, 22 percent), Haute Guinea (savannah region, 40 percent) and Guinea Forestière (20 percent).

The country had a population of 8.2 million in 2004, with 48.8 percent male and 51.2 percent female, and an annual growth rate of 3.1 percent. Guinea is characterized by its youth, with 44 percent of the population is under the age of 15. It is also characterized by its rural nature, with nearly 80 percent of the population practicing subsistence farming in villages.

Shea grows naturally in the northeast area of the country — particularly in the Haute Guinea regions, where nearly 15 percent of the population lives, and is directly or indirectly involved in the shea economy. One and a half to 2 million inhabitants living in the urban centers are potential consumers of the butter from the shea sector, thanks to the efforts of rural women in the villages of Haute Guinea.

As for the other groups of developing countries, the foreign debt level is a bottleneck in the economic development. The worsening of exchange terms on the raw materials markets and

consecutive drop in export receipts magnifies the reduction of the government's capacity to support development projects and programs.

In the case of Guinea, the sustained promotion of the agricultural systems directly from government resources is unlikely. Because of this, poverty prevention has become a national priority. The problem is more pronounced in the Haute Guinea region, with extreme poverty estimated at 62 percent, according to the Poverty Reduction Strategy Paper (PRSP), Women are the most vulnerable to poverty in rural areas, due to the combined effects of their social environment and economic forces that are unfavorable to them.

With a view to improving the socio-economic situation of the population, through stronger economic growth, the PRSP presents guidelines to reduce poverty. In terms of rural development, the paper emphasizes increased development of the expanding sectors and promoting exports of agricultural products.

OVERALL STATUS OF THE SHEA SECTOR

The Guinea shea sector faces numerous challenges in ensuring the competitiveness of shea and its promotion in local, sub-regional, and international markets. To prepare for this challenge, information was collected from several parties directly involved in the sector, including support organizations and support services (logistics providers, financial providers, distributors) for commercial operations. Various data was examined, in particular assessment studies conducted by ARCA in Guinea. These studies present the current characteristics of the shea sector in Guinea through analysis of the constraints identified and development opportunities to be considered. Proposals are made for the priority actions to improve both the domestic and export markets.

The ARCA project also organized a large national workshop on shea, held on April 24-25, 2006. The workshop provided a forum for specialists in the sector to provide current information and enabled stakeholders to exchange ideas for a true take-off and economic expansion of this sector in Guinea.

Among the various issues addressed, the discussion concerned:

- Guinea's production potential compared with other countries
- The type of support currently provided
- The commercialization profile of Guinea in a global context
- Market opportunities in the different usage segments of shea butter
- The technical and technological aspects related to obtaining quality almonds and butter consistent with customers' requirements
- Methods of better structuring and organizing the parties involved

Training sessions on shea processing were organized with the support of the CECI and ARCA. Following their training, beneficiary groups made appreciable improvements in the field in butter production. Female producers in the villages of Sébékoro, Kiniéran, and

Morodou noted with satisfaction the impact of the trainings — particularly the new processing diagram they learned to use — on improving the quality of their butter.

Butter supply has also improved. Exporters received support by being put in contact with supply sources in villages. They obtained information on the global market, including profiles of international buyers. Subsequently, a capitalization of the information gathered, in the form of a shea product development plan in Guinea, was deemed appropriate.

Despite this progress, production to date appears poorly exploited in Guinea, due to insufficient technical support and investment. ARCA sponsored this study on the development of a Shea Product Development Plan in Guinea with an eye toward better contributing to the promotion and commercial development of this sector.

In many of the 16 shea-producing countries, shea exports contribute significantly to the trade balance, and thus shea is a product of economic importance and is granted priority monitoring in economic development plans. In Guinea, although shea represents a notable segment in the local economy of the regions concerned, exploitation of shea has not received substantial technical, financial, or commercial support. Because of this lack of investment, Guinea is not recognized as a potentially viable source in the international shea trade.

Formal exports to the international market are nearly nonexistent. Wholesalers note some informal exchanges through cross-border flows, in particular to Sierra Leone, but no specifics are available on these quantities or values.

Data on Guinea do not appear in the export statistics published globally (UNCTAD, FAO). This indicates that no export specialty has been developed so far for this product. Therefore, consumption of the portion harvested and processed by rural women is considered domestic. With the intervention of certain projects (PEGRN, Africaire, CECI-Guinea, ARCA, etc.) and national NGOs, work is now focusing on including shea among the expanding export sectors in the country.

Improving production, processing, and commercialization conditions and strengthening capacity of the sector's involved parties are a major challenge. Meeting the challenge will involve increasing the competitiveness of the sector in order to seize the market opportunities (almonds and butter) that are confirmed for shea. The strategic areas to address are:

- Organization of the parties involved, in order to better manage the value chains
- Adoption of a quality approach, in order to bring to the market a diverse range of compliant products
- Reduction of the defects in the organization of the markets, in order to enable more effective supply networks
- The creation of better-adapted financing mechanisms, in order to support investments and commercialization

DESCRIPTION OF THE INTERVENTION OPPORTUNITIES

TARGETED REGIONS

General Presentation

Shea is produced in 16 African countries, in a strip of land that extends west-east for approximately 5,000 kilometers between the latitudes of 11 and 14 degrees north. In Guinea, production takes place in prefectures of Haute Guinea (Mandiana, Siguiri, Kankan, Kouroussa, Faranah, Dinguiraye, Dabola and Kérouané) and Moyenne Guinea (Mali, Koubia, Tougué, and Koundara, with population pockets in Labé, Dalaba, Lélouma and Mamou). Both areas are located within those latitudes and both with a variable distribution of trees per hectare.

The largest production areas are in Haute Guinea and the smallest pockets in Moyenne Guinea. The development plan will concentrate on interventions in Haute Guinea.

Administratively, the Haute Guinea region covers 98,343 square kilometers, or nearly 40 percent of the country. The climate is Soudano-Guinean, with an average annual rainfall of 1,500 millimeters. The shea density covering this zone of wooded savannah is also very variable, and at this time, no reliable data is available to quantify the country's production potential. Similarly, very little data is available on the quantities effectively picked annually by the female producers in the different villages.

In the largest prefectures, the availability of shea butter and its local commercialization on the rural supply markets provide overall indications. The sector studies conducted to date use prefectures that cover 66,800 square kilometers, with a total of 1,185,850 inhabitants. The breakdown of population, according to the revised 1996 census, is as follows:

- Mandiana: 107,541 women and a total population of 212,531 in 25,301 households
- Kankan: 160,707 women and a total population of 318,231 in 37,885 households
- Siguiri: 177,250 women and a total population of 348,917, in 41,538 households
- Dabola: 68,515 women and a total population of 133,158, in 20,640 households
- Kouroussa: 89,275 women and a total population of 173,013, in 20,597 households

The populations of the targeted regions are considered among the poorest in the country. They are basically rural and women are a very vulnerable segment. For these rural women, shea is one of the principal sources of farming income.

Motivations of the Targeting

Guinea's demographics were central to targeting. In Haute Guinea's rural areas, at least 400,000 women (almost 5 percent of the Guinean population) and 90,000 rural households are directly affected by shea development and commercialization activities. According to the majority of the female interviewees, Shea exploitation activity would represent over half of their income.

Socio-economic concerns also played a role in targeting regions. For the Haute Guinea region as well as the country, shea is a priority sub-sector to be supported, especially in light of the implementation of national poverty reduction strategies. In the rural centers of Guinea, shea is important in socioeconomic terms — for maintaining social cohesion, assisting in the budgetary balance of the households, and developing local employment for women. Women from the region participate as household labor in the main family farming activities. In the organization and selection of their strategies to generate income, the processing of shea and commercialization of the butter obtained hold an important place.

With regard to economic development, poverty indicators classify these Guinea prefectures as the hardest hit by the economic difficulties. They are among the least developed in the country and the most vulnerable to poverty due to farming production uncertainties. Family expenses (food, schooling, health care) are met through the exploitation of forest resources, including specifically the commercialization of shea butter. These prefectures depend greatly on agriculture for food security as well as income.

Subsequent Selection of the Intensification Areas

Some basic criteria (social dynamics, shea potential, level of openness, the existence of operational support structures, etc.) as well as an evaluation of competitiveness (quality, quantity, price), will be used in the selection of three or four prefectures. By receiving targeted resources, the sites will have intensive support in carrying out pilot production operations and, more specifically, market tests.

Specific criteria, will also be used in selection of intensification areas. These include:

- Intrinsic quality of the products from the area (if the chemical profiles can be established in a timely manner)
- The status of shea resources, in terms of tree density; easy access for picking fruit; and variety in early fruit season and late season
- Reputation of the producer groups for regular quality
- Population of women and the total number of female producer groups in the census
- Ease of access and level of cost in transportation from the villages to Conakry
- Presence of prefectural unions of market gardeners

These criteria may be refined later, during the implementation of this development plan.

TARGETED GROUPS

The principal initiatives (which could be revised later) can be supported and coordinated through the efforts currently underway in creation and promotion of rural organizations. The different core organizations participate in activities to strengthen capacity, sharing of information, commercialization, promotion of agricultural products, and defending the interests of the core producers. In the specific case of shea, analysis of the supply chain shows that activity takes place among groups of parties with distinct roles and functions within the sector.

The Shea Product Development Plan will address production at several levels.

In the Major Processes

- Processing and first market launch: Producer groups as well as unions of groups and private owners of production equipment are concerned
- Collection, grouping, and distribution: Duties ensured by the urban wholesalers in the sale of shea butter and their network of collectors in village markets
- Export: commercial companies that specialize in the product
- Industrialization: International companies that use almonds and butter to produce high-value finished products (foods, cosmetics, pharmaceuticals, health-enhancing foods and other derivative products, etc.) are targeted
- Local consumers and foreign buyers: The end customers to make interested in and be satisfied by the Guinea supply

Sector Support Process

The female producers and networks of wholesalers are supported by various technical and financial partners and by various service provider groups.

On the development strategies level are decentralized groups and local development committees; public utilities involved in the sub-sector (ministries, national offices and associated technical departments); international organizations; technical departments of the bilateral cooperation missions; and socio-professional organizations (local chambers).

On the professional organization level: Compared with the agricultural and private sectors, the local chambers will be favored targets. Local chambers will encourage the broad promotion of the sector and organization of frameworks involving the government, decision makers, and direct players in the shea sector:

- The Chamber of Commerce, Industry, and Arts and Crafts of Guinea (CCIAG);
- Guinean National Council of Employers (CNPG);
- National Council of Rural Guinean Organizations (CNOP-G), and of the Chamber of Agriculture

On the trade promotion level, the principal trade promotion organizations in Guinea which will be used are:

- Centre International d'Echanges et de Promotion des Exportations (CIEPEX);
- Center for Export Formalities (CAFEX).

On the technical support organizations and providers level:

- Local manufacturers and distributors of equipment, packaging and other useful factors of production

- Trucking companies between the rural markets and urban centers
- Daily workers who perform the packaging and handling work at markets
- Engineering firms and NGOs involved in assistance-consulting and performance of various services to strengthen capacities of the rural parties involved
- Financial institutions, specifically through the decentralized financing system and some commercial banks, where relevant
- Scientific and technological research institutes
- Private quality analysis laboratories

Market Opportunities

The products produced from shea are quite diverse, and are exchanged in local markets. Internationally, almonds are in demand from manufacturers, and butter is in demand from the cosmetics sector.

Diversity in the Fields Used

The shea economy is based on a large possibility of development. This is especially true because shea has multiple uses. Among these uses are:

- Wood, leaves, bark, and roots, used locally as energy sources and in traditional pharmacopoeia
- Fruit, which is edible in whole form or pulp that can be preserved as jellies and jams
- The butter contained in almonds is particularly rich on the molecular level, which gives shea technological capacities for applications in the food, cosmetics, and pharmaceutical industries (See some claims in Appendix 8).

Interest in New Uses

Shea manufacturers are committed to researching and developing tracks for sophisticated technologies that would isolate and purify the natural molecules of the butter. Such developments would create very attractive applications for use in new products. The market opportunities are great and supported by a growing demand. One objective of the development plan will be to take advantage of these opportunities by adapting the supply to the needs of the different market segments.

Opportunities on the Local and Sub-regional Markets

In the principal local urban markets, the growth margin for butter consumption could be even greater, with over 3 million potential consumers.

Regarding diversification of finished product lines, there are positive indications for increasing the local demand as well as an interest in developing new products with high added value for market segments in Guinea. Business opportunities exist in the cosmetics, soap and high quality culinary fat sectors (stable, odorless, well packaged, and competitive price compared with imported oils). This diversification strategy is a good basis for

development and potential absorption of a large portion of local shea butter production. It is hoped that diversification will lead to female producers improving and increasing their supply capacity.

International Market Opportunities

There is a demand for shea almonds from the two major manufacturers, Aarhus/Karlshamns and Loders Croklaan, that currently dominate the international market. The almond purchases by these manufacturers represent over three quarters of the world demand: their annual needs are an estimated 150,000 tons of almonds (or about 75,000 tons of butter). These manufacturers do not buy butter from their localities because they have found the technological constraints too great to guarantee regular access to a butter that meets their quality requirements, and they consider the local logistics poor for shipment of the butter on a large scale without risking the quality of the product.

For these manufacturing companies, the stearic portion of the shea butter is the principal opportunity to produce CBEs (cocoa butter equivalent) and CBIs (cocoa butter improver) used in chocolate factories. This segment is the largest by far in terms of quantity and added value. The technologies used call for heavy investments, which producer countries will have difficulty achieving. Due to the increase in world chocolate consumption, growth is projected in the demand for shea butter and especially in the form of almonds.

These circumstances present a business opportunity for Guinean exporters. They could propose creating sustainable business contacts through which to supply Aarhus/Karlshamns and Loders Croklaan with reliable quantities of almonds meeting quality requirements.

Origin specificity. An acceptable almond supply exists in Guinea. The good quality of Guinean almonds was confirmed through an analysis by Rutgers University, which used almond samples collected by the PEGRN project. The almonds were from Dabola, Kouroussa and Tougué, and compliance was established based on the diameter, average weight, coloring and total fatty acid content.

The work underway at Prokarité (VITTELARIA database) provides the fatty acid profile for certain zones in Guinea. The chemical components indicate an appreciable abundance of the insaponifiable fatty acids sought by the cosmetics industry. Therefore, it can be estimated that certain pockets of shea in Guinea could be a good supply source for the cosmetics industry.

Development of almond purchases in the sub-region. The discovery of new areas of application, which are sources of growth for shea demand, is an opportunity for producer countries. Information is incomplete on these highly strategic segments, and the actual needs of large international companies are unclear. However, Aarhus/Karlshamns and Loders Croklaan are investing in development of their representation in West Africa (common purchasing agencies run in Côte d'Ivoire, Burkina, Ghana, Togo and Nigeria).

To understand how international prices are determined, the correlation between shea and other sources of vegetable fat must be considered. Shea exporters must develop the ability to analyze and anticipate vegetable fat on the global market.

Favorable growth trend for shea butter used in cosmetics. Shea butter's abundance of insaponifiable elements and other micronutrients account for its value to the cosmetics industry. Specifically, its hydrating power and protective properties for the skin are sought to

satisfy end consumers. These reasons support the growing demand for butter in Europe and North America. Manufacturers offer a large range of cosmetic products with high added value, taking modern distribution systems and targeting consumers with strong buying power.

Cosmetics manufacturers generally prefer butter obtained through pressure processes, which better preserve the content of insaponifiable elements. For this reason, the best butters extracted through traditional methods can reach this market. Niche markets are developing for butter obtained through organic processes. This segment is strongly supported by fair trade organizations.

In the 1980s, the global demand for butter for the cosmetics segment was approximately 1,500 tons. The current demand is estimated at 5,000 tons. At this time, market shares are low in Guinea — it holds less than 5 percent of the international demand for shea butter. Improving the production and commercialization conditions in Guinea will make it possible to create a favorable situation for access to the international cosmetics market and capture its shares for female producers who will be able to provide satisfactory by-products.

Ultimately, Guinea operators must be prepared to acquire the capacities and competitiveness necessary to compete in the market. Guinea must target the three stages of participation of the cosmetics market, as identified by the analysis of the shea value chain.

- **Immediate future: Penetrate the market.** The market for village raw shea butter intended for European and/or American refineries remains strong and continues to increase. Clientele is comprised of wholesalers or small- and mid-sized refining units (for the neutralization, discolorization and deodorization processes). Refining adds value by preserving the portion of insaponifiable elements, which is normally 5 to 8 percent of butter; and by improving the texture through homogenization.

Distribution chains are well established. The majority of raw shea butter comes from Ghana, Benin, and Burkina, where distributors/importers already have good commercial relations, quality is known and well valued, supply is constant, and prices are somewhat stabilized (around 1 to 1.2 euros) at FOB West African port.

An opportunity exists to penetrate this market if Guinea improves butter quality, increases the volume of the supply, establishes the same price ranges, and standardizes transport through maritime shipment to Europe or the United States. It is also necessary to conduct an intense public relations project in Guinea to promote commercial negotiations and persuade purchasing managers of refineries in Europe or the United States of the value of Guinean butter.

- **Short- and medium-term: Develop “natural quality.”** Taking the next step into the cosmetics market requires better development of the shea butter’s “natural quality,” which guarantees the highest integrity of all active substances. Cosmetics manufacturers include this type of butter as a basic element in a wide range of luxury products and use the natural quality as a market point.

For the European and American markets, Guinean sellers must plan for commissions paid to marketing and distribution agents, in the absence of being able to sell directly to a multitude of small manufacturers. Cosmetics units in this segment buy in small quantities,

which makes supply logistics (turnarounds, regularity, transaction costs, etc.) rather complex for small vendors.

- **Medium- and long-term: Organic certification.** Cosmetics units, distributors, and refineries of shea butter are increasingly their demand for organic shea butter. While the exact size of the organic market is not known, the prices are attractive in this segment (at times over 50 percent above conventional butter).

However, given the current situation in Guinea, the steps and costs of organic certification make this an opportunity that can only be realized in the medium term. Producers must have capacity to isolate certified organic almonds from all the other conventional almond segments. Therefore, a preparation phase should be established, with the objective of researching the technical possibilities and projected profitability of organic shea butter production.

COMMERCIAL POTENTIAL

The Value of the Product

Good shea almonds are highly sought after for their technological and biochemical properties. Processing butter creates products with very high added value that are in increasing demand in various food, cosmetic, and pharmacological industries internationally.

Source of Jobs and Income

Guinea has natural shea vegetation, particularly in the Haute Guinea region,. While production potential has not yet been determined specifically, there is no doubt about the sector size in the social economy of the villages of this region. Recent evaluations by experts at ARCA and PEGRN place butter production at a minimum of 5,000 tons per year. With an FOB price of \$1 (average price of unrefined raw butter for recent years), this equals a minimum value of \$USD 5 million. The number of activities along the shea supply chain enables all parties involved to generate income. Regular statistical monitoring would allow better tracking of the percentage of each party's annual income represented by shea.

Shea processing mobilizes significant labor in the villages. Production capacity of traditional processes is around 5 kg of butter per woman per day. Based on average annual production, the equivalent of 30,000 to 35,000 person-months are required. Commercialization includes a dealer network (which realizes considerable sales from the collectors in the villages) to wholesalers active in distribution in the large urban centers.

Socio-economic Roles

Currently, shea is marginalized, from the perspective of its contribution to government funds. Its contribution to the GDP is not determined, probably due to a lack regular collection of data on the sector. Economically, its role appears to be underestimated, but shea is clearly of great assistance to families, providing nutritional fat, health benefits, and income for the rural women involved in production, which reduces women's vulnerability to rural poverty.

Home consumption by families in rural areas appears to be around 50 percent. The surplus is sold in village markets for large-scale distribution in urban centers. The cities of Kankan, Conakry, Labé, and Mamou are more active in the system of collection, centralization, and distribution to consumers.

Steps to increase the sector’s contribution to economic development include: Improving management of shea stock, to increase its durability; improving techniques and technologies, to produce stock that meets the requirements of markets; and organizing the parties involved.

In terms of domestic trade, shea is exchanged through several economic operators across the country, providing a source of income for all parties involved. Although statistics on volumes and values are not available to quantify the full economic importance of these transactions, cross-country flows are clearly robust. Table 1, based on surveys conducted by ACA and SNSA, maps the economic links between female producers of shea butter and their groups, wholesalers, and consumers.

Table 1: Regional Flows of Shea Butter

PREFECTURES	LARGE PRODUCTION AREAS	WEEKLY MARKETS	PREFECTURES SERVED	COUNTRIES SERVED
Kankan	Baté nafadji, Douawalia, Séléoussaya Bakonko, Cisséla, Soumankoï, Foussein, Djankana, Missamana, Alyamounou, Kignéba, Makono, Djaloni, Bankalan, Karifamoryah, Djélibakoro, Timinidou, Sanfina, Koté, Wolondou, Fodékaria, Boussoura, Djansouma, Djimbala, Tintioulen, Sana	Djélibakoro, Fodékaria, Baté-Nafadji, Missamana, Djimbala, Bakonko, Koumban, Moussaya	Conakry, Boké Boffa, Labé, Pita Mamou, Dalaba N’Zérékoré, Guéckédou, Macenta Kérouané	Senegal Gambia Sierra Leone EU USA
Mandiana	Soutoudjana, Faraba, Niantanina, Djalakoro, Saladou, Morodou, Mandiana, Limbana, Kignéran, Faralako, Kabaya Loïla, Kanifara, Farandoun, Koundjan, Konkoyi, Youroumakoro	Niantanina, Mandiana, Konkoyi, Djalakoro	Mandiana, Kankan Kérouané	
Kouroussa	Koumana, Doura, Kaboukaria, Sandjana, Moussaya, Sanoussia, Djaragbéla	Kaboukaria, Koumana, Doura	Kankan, Dabola Faranah	
Siguiiri	Nafadji, Norassoba, Nounkoukan, Falama, Kignébakoro, Danka, Diomabana	Djélibakoro, Norassoba, Diomabana	Conakry, Siguiiri Kouroussa, Kankan	

TARGET BENEFICIARIES

This Shea Product Development Plan names rural female producers as target beneficiaries. Fundamentally, most Guineans consider the exploitation of shea “rural women’s business.” By developing the product, women are seen as conducting a useful social activity that greatly contributes to the family living and is valuable in terms the income it generates. But paradoxically, the economic balance is unfavorable to women, who are at the beginning of the shea product supply chain.

Several issues related to the concept of gender and development are also present in this sector. For example, wives must receive prior authorization of husbands to participate in travel for study and training at educational fairs. Activities to develop shea in Guinea could

also address gender issues by promoting economic opportunities that favor female shea butter producers.

Relative to their Community

Access to the resource does not seem to pose critical problems linked to gender, compared with other producer countries where conflicts exist in the picking the fruit in the shea groves. Traditional rights in the different areas visited do not seem to prevent women picking fruit. Commercialization of almonds, which would be attractive to men, is not customary. However, it would be appropriate to plan actions favoring the sustainable management of this natural resource with groups of female shea producers given greater responsibility in the implementation of environmental accords and observation of the associated regulatory frameworks.

The manual tasks of processing shea are considered tedious and essentially feminine by the community. With the mechanization of some operations such as the grinding, men are becoming more and more involved in the process, especially in the operation of the equipment generally installed on multifunctional platforms. They provide paying services to female producers. Mechanization will therefore lead away from stratification of labor to a more even distribution of tasks, freeing women from certain tedious activities. It is possible to train women in the handling and maintenance of the equipment in order to prevent this male pressure.

Compared with other agricultural products, shea's production schedule does not permit an advanced specialization of women. Yet, such specialization could be a good business opportunity for many women and orient them toward forming small cooperatives in order to better structure activities through the profitable exploitation of shea. Plans could build on the development of cooperative entrepreneurship in rural areas.

The income obtained from shea is intended to take care of the needs and comforts of the home. By thus allocating their hard-earned income, do women play their role or not? What level of control do husbands or men have to determine the use of the income from the fruits of their wives' labor in shea? These are the sensitive and taboo issues for rural women.

Relative to the Market

Rural women (butter producers) have little involvement downstream in the supply chain and are unable to participate in the most lucrative market segments. Yet, opportunities for improving the female producers' income would be a significant result and contribution to the implementation of national strategies to reduce poverty, in rural areas in particular. The incentives will be to encourage women to commit to creating more added value to the butter offered on the market.

Compared with the commercial players, female village producers are not favored by the distribution key of the added value created by the sector. The world shea market generates many financial profits, the effects of which are not felt in the form of improved working or living conditions of the female producers at the beginning of the supply chain.

The competency of the isolated female producers for competitive commercialization is very low. One of the challenges posed relative to the issue of gender is reinforcing the commercial capacity of rural women so that they receive a more equitable income. Meeting that challenge

would consist of creating favorable conditions for them, in order to create more value locally for the product. In addition, organization of unions could lead to a collective market launch strategy of shea supply, which would encourage a rebalancing in favor of women. In this way, support programs can ensure that female producers will receive support in strengthening their skills in commercial negotiation and supplying quality products that meet the needs of each market segment to be targeted.

Relative to Human Development

More recurring problems emerge when the question of gender is posed. They are obstacles to greater participation of women in entrepreneurship and development in commercial business. The issues include:

- The lower education level of women, which limits women's access to strategic commercial and technological information and thus control over business decisions concerning them.
- The poor level of access and asymmetries between businessmen and rural women regarding information on business opportunities.
- The social hierarchy, which leaves the tedious tasks and responsibilities to women in order to generate income for family expenses. According to the vast majority of women met, shea is the principal product whose sale allows women to meet expenses such as food, education, and medical care.
- Spousal authorization seems to be a condition for participation in some forms of economic activities, such as distance travel and prolonged absences outside the home for training, sell products on other markets, etc.
- The distribution of income generated by shea processing remains unclear. Do men directly and formally enjoy a portion of this income?

The consultants limit themselves here to raising some fundamental and sensitive questions since they do not specifically concern shea, but reveal a well-anchored socio-cultural foundation. The complete solutions will be sought in other chapters of rural development. The question remains open concerning the free use and destination of the income accumulated by women through the shea sector. The difficult question is not only in terms of shea exploitation, but the economic independence of rural women.

Overall Assessment: Promotion of Rural Entrepreneurship

Throughout the rural organizational system, unions are an important support point through which women can directly benefit. Women in the shea sector must organize themselves in order to begin training and commercialization activities and play more proactive roles in the decisions that will bring them greater benefits. Female shea producers should be encouraged to form new cooperatives, which will enable women to take an entrepreneurial approach toward the market.

Advantages of Targeting Rural Female Producers

REINFORCING MARKET CONNECTIONS

The income generated by shea will likely grow, and in a sustainable way, when more reliable contacts are established linking female producers and buyers. The improved supply capacity

(qualities and quantities) will create confidence and loyalty among buyers. Through the improved organization of the female producers, and their strengthened capacity to produce products of better quality and increased added value, consumers' requirements will be increasingly satisfied. These improvements will provide women with more credibility and better market access.

INCREASED INCOME OPPORTUNITIES

The increased income will serve as an incentive for women producers to further invest in themselves by intensifying productivity (picking capacities, technology for obtaining good almonds, extracting butter).

CONTRIBUTION TO WELL-BEING

Given that rural women dedicate most of their income to family needs, increased investments could benefit rural households by improving food security and children's education. By ensuring that shea producers have the opportunity to develop and test the market products with higher added value, it will be possible to increase the income granted by shea and contribute to improving long-term quality of life.

In short, placing rural women at the core of this Shea Product Development Plan and promoting existing female producer groups as the target beneficiaries presents several compelling advantages.

- Improvement of the effectiveness of the overall shea chain
- Resolution of the principal problems: product quality and organization of the commercial activities from the start of the system
- Reinforcement of the capacities of female producers to control all facets: processing technologies, quality management, business management, access to information, access to financing, and participation in business decisions.

This would be a development path enabling women to earn a respectable living as a direct result of their work and active, responsible participation in the local economy.

ANALYSIS OF THE VALUE CHAIN AND IDENTIFICATION OF THE AGRO-BUSINESS ORGANIZATIONS

VALUE CHAIN

The constraints and opportunities of shea value chain, as established through a sector analysis approach by ARCA, can be mapped as follows:

- Players in the sector are pinpointed through their principal functions and the major roles (production, commercialization, shipping, provision of services, consulting support, etc.)
- The constraints are identified and described at different stages (organizational, technological, commercialization, financing, market infrastructures and logistics)

Analysis of the world supply chain shows a global need for large industries on the order of 25,000 to 30,000 tons of butter. Approximately 90 to 95 percent of the butter is intended for the food sector and is used predominantly by chocolate factories as CBE and CBI. The remainder is consumed by the cosmetics and pharmaceutical industries. According to statistics (FAO, CNUCED), Guinea is now practically absent from play on the international market.

The stages and player groups of the shea value chain are as follows.

Products and Players on the Local Market

- First stage: Picking of fruit; production and handling of raw material (nuts and almonds); preparatory work of obtaining the raw material (shea almond), performed by village women.
- Second strategic stage: Manufacture of unrefined raw butter on the scale of small family farms. In Guinea, these operations are performed by rural women through craft-based processes and are based on traditional knowledge.
- Third stage: Sale of unrefined raw butter in village markets. Rural collectors buy from the women to supply urban wholesalers, who have storage capacity and a larger financial base. The supply from the female producers is mixed and very fragmented; the most abundant supply is between September and January. Butter is one of the principal sources of income for rural female producers, but in the absence of reliable commercial relationships or information on opportunities and prices, women do not underpin their activity with a merchandizing strategy.
- The local exporters link: Guinea currently has very few — no more than five are identified for actual operations, which concern some ten tons each year. Approximately 10 commercial companies wish to exploit the international market for butter and almonds. To begin, they must seek and develop sustainable commercial relations with manufacturing companies or wholesalers on the international market. Then, establishing partnerships with female producers will allow the companies better control of their supply systems, transaction costs, and commercialization expenses.
- Final distribution on local markets: Currently, Mandiana prefecture (the eastern part of the country) consumes over 50 percent of the production. The Western part (Kankan, Siguiiri and Dabola) consumes less than 50 percent of the production. This disparity is

explained by the availability and competition of palm oil and imported refined oils and by the relative enclosure of large production areas. The surplus butter is sold in weekly stall markets for transport to urban centers. Almonds are not present on the transaction level in markets in Guinea. As in the other countries, the domestic market is highly penetrated by imported oils and fats.

The difference between the current and potential consumption must be made up through information and training on the various shea butter culinary processes. In-depth research must be performed to determine the profile of the local butter consumption and specify the commercialization approach to be developed. The challenge is to develop a local market to support increased shea butter consumption. To address the challenge, strategic support will focus on a policy of diversification and creation of local added value by improving the development level of a range of finished products (cosmetics, improved culinary butter, household soaps, luxury hand soaps, etc.) for consumers.

Products and Players on the International Markets

Predominance of the buyers of exported almonds. Almonds come principally from Burkina, Ghana, Benin, Côte d'Ivoire, and Mali. Guinea is not currently present in this segment. Processors are based in Europe, and two companies (Aarhus/Karlshamns and Loders Croklaan) clearly dominate, with 90 percent of the market share. Their job is to extract the butter from shea and fractionate it into stearin, olein, and other by-products. They principally supply the large food and pharmaceutical manufacturers downstream with high-added-value vegetable fat.

Exports of local raw butter supported by refiners. The operators in this stage are wholesalers, importers, and distributors, which are mainly based in Europe but operate in India and the United States. They specialize in the purchase of raw butter, but also seek almonds. Products are subsequently developed by refineries. The raw butter, in this case, undergoes additional treatments to improve its quality. Their production enables supplying small cosmetics manufacturers with shea butter. Increased local production capacities of improved butter would be able to short circuit the refiners and sell directly to the cosmetics industry;

Chocolate manufacturers in need of the stearic portion of shea butter. With the authorization to use up to 5 percent of other vegetable fats in the manufacture of chocolate, shea is held in particular esteem for its functional properties. Its stearic content has a higher melting point than that of cocoa butter.

Manufacturers of cosmetic products promoting the virtues of shea butter. Cosmetics manufacturers use the specific properties of the shea butter to improve the formulation and functionality of their products. Given their formulation and manufacturing constraints, they look for high quality products obtained from highly standardized processes, making it possible to ensure the regularity of the composition and texture of the butter.

Manufacturers of pharmaceutical products promoting the virtues of shea butter. These manufacturers look for compounds with therapeutic properties. Butter is also used as an excipient for certain medicinal formulations. Realistically, only shea butter manufacturers with sophisticated technologies to fractionate oleaginous are able to satisfy needs of this level.

Players in the fair trade movement. Through efforts to improve procedures for obtaining butter from villages, the “improved shea butter” high-value-added product is attractive for niche markets, comprised of small cosmetics companies that are supplied based on fair trade principles. These market trends are developing, of course, in the North American and European markets. However, the supply of the female producers targeted by the fair trade format greatly exceeds the demand. Therefore, it will be necessary to seek out partnership agreements in order to have access to the opportunities on this level. In particular, approaches to labeling through FLO (Fair Trade Labeling Organization International) procedures must be taken.

Evolution of Technologies

Control of fractionation technologies is an important factor for increasing demand from international manufacturers. In American and European markets, high-end products obtained through sophisticated technologies are offered to consumers. Globally, in the African producer countries, the value added to the product is nearly always limited to the manufacture of raw butter and some items prepared for use in cosmetics. The technological investments have always been low, in hopes of doing more in the creation of local added value.

In Guinea, too, weak development limits products to the almonds and unrefined raw butter produced by rural female producers. There is little technological investment and no industrial processing exists in the country. All the steps of obtaining almonds and butter are based on traditional knowledge and dominant manual operations.

ADAPTATION AND ADOPTION OF STANDARDIZED METHODS AS CONDITIONS FOR ACCESS TO THE MARKET

With regard to the standards required by users, at this time, manufacturers are better able to meet the demands of the operators furthest downstream (chocolate, cosmetics, pharmaceuticals). Direct use of the butter obtained in the villages through traditional processes is limited to some cosmetics manufacturers (The Body Shop; Occitane) if it proves to be of good quality and regular, which is also rare.

Currently, butter is mass-produced without consideration of the needs of the demand; no link has been established between the product and the market segment. The parties involved will also have to resolve a value issue: the connection between the flat cost of the product and its quality. Frameworks for concerted action and commercial negotiations will be useful in understanding the needs and requirements of the demand in order to be in a position to satisfy them.

From now on, it would be more logical to integrate the design of the product, manufacturing procedures, and technologies used, so the product can meet the requirements of the demand. The needs and requirements of the demand can be respected by simply returning to the definition of quality: “the product must make it possible to satisfy a set of expressed or latent needs.”

WAEMU and ECOWAS analysis of the drafts of African standards for shea products clearly shows that this type of raw village butter corresponds more, in most cases, to the needs of the soap makers. Only the strict application of improved and standardized methods in all the villages will permit the production of butter eligible for use by large cosmetics manufacturers.

Also, this situation leads us to insist on certain key concepts of the value of the product in relation to the level of quality. For the commercialization strategy, operators must be made aware of, informed of, and trained to seize the importance of the market approach and the need to give customers a level of quality sufficient to ensure the function of the product.

Evolution of Prices

- In the village in Guinea: The prices noted on the local market during this mission (September-October 2006) were 5,000-6,000 GNF per kg (USD \$1 = 6,000 GNF).
- At the Conakry market: Wholesale prices were 7,000 GNF to 8,000 GNF in urban centers. According to wholesalers, intra-annual fluctuations are significant, with differences of up to 2,500 GNF between July (lowest prices) and April (highest prices).
- In a European port: For export, CFI prices were estimated for the same period at 1.2 to 1.5 Euros per kg for improved raw butter (8,000-10,000 GNF).
- In a cosmetics boutique in Europe: For processed butter (raw and natural with modern distribution packaging), the average prices noted on the Internet (sales via electronic commerce) are approximately 30 to 45 Euros (190,000 - 290,000 GNF), depending on quality. Between the village of Kankan and the shelves of a luxury products store in Paris, the market value of the butter is multiplied by at least 20. If European consumers are ready to pay this price, there will be great potential and a gap to be filled by implementing suitable means permitting better local development of shea.

The agro-processing industries and female source producers in Guinea owe it to themselves to develop more advanced products in order to move as far as possible downstream in the shea value chain. Yet, without large investments in the most high-performance technologies, this will prove unrealistic.

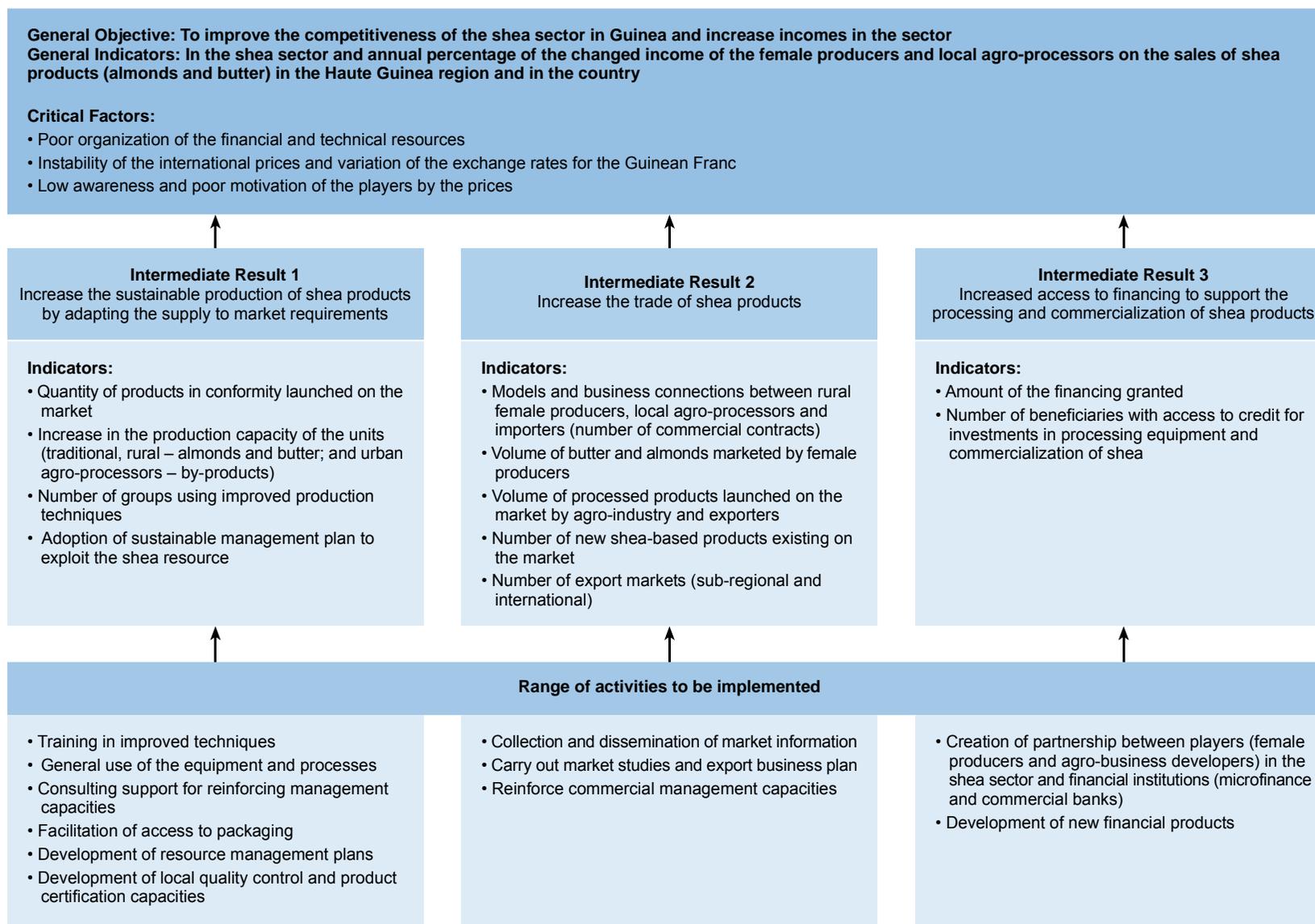
AGRO-BUSINESS ORGANIZATIONS

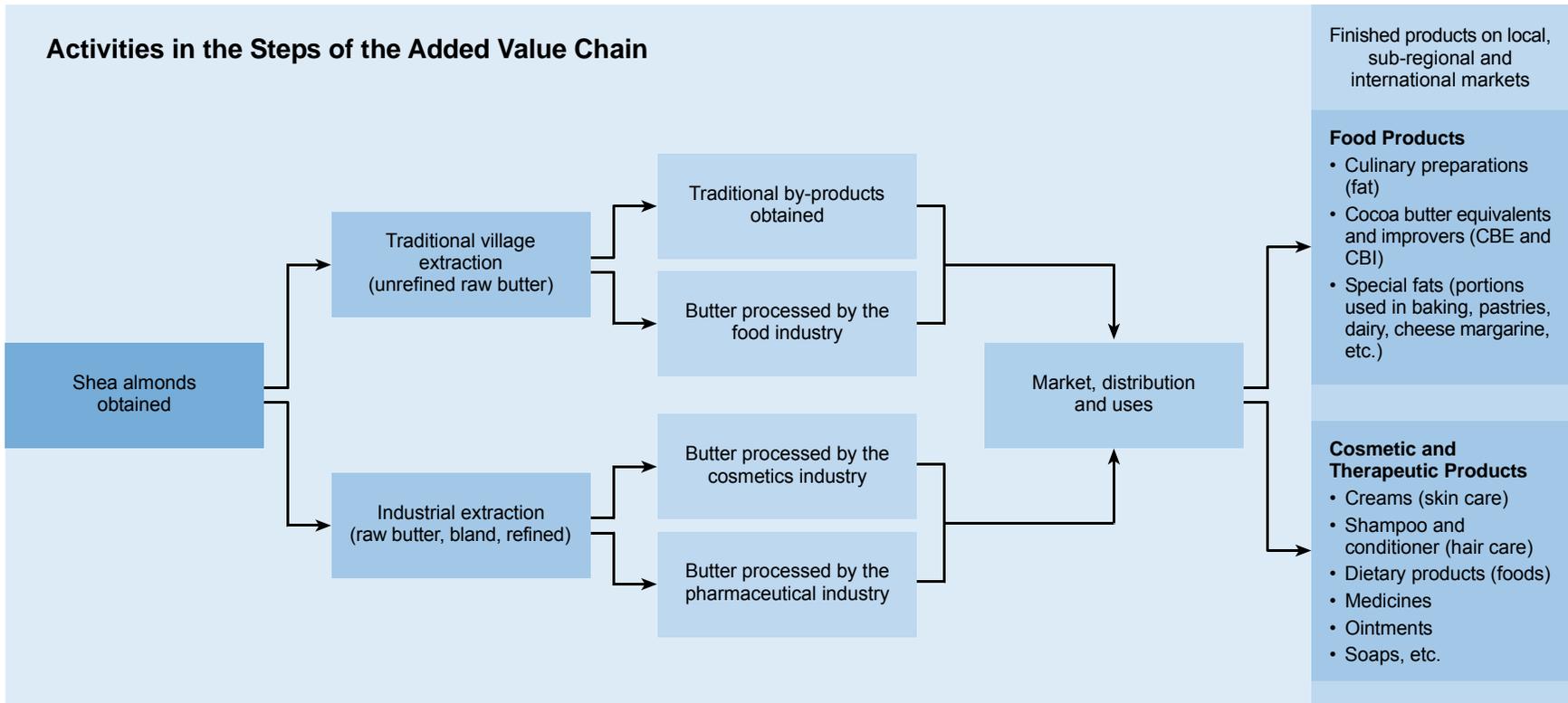
One of the objectives of this plan is to allow creation of networks with the participation of all parties involved. The commercial cooperation space thus created will enable all parties to share a vision as well as acquire the appropriate means to defend the interests of the sector. This assumes a voluntary commitment and discipline to participate in the implementation of the process.

The development of a project specific to shea would provide a good opportunity for contribution by various support services and private providers in Guinea. Profiles of these different organizations appear in Appendix 4.

Several resource organizations and people were identified through the assessment studies conducted by the ARCA project. During field missions, consultants spoke with key potential players supporting the shea sector in Guinea. Some of these organizations are listed in Table 2 on the following page. These or other organizations with equivalent competencies could prepare bids for services to meet the improvement needs identified as weaknesses or threats (see SWOT assessment). The table also presents the link between the organizations identified and the roles/functions that they are able to assume in the implementation of this shea product development plan.

Table 2: Parties Involved in Shea Production





SWOT ASSESSMENT AND ANALYSIS

PRODUCTION

One strength of the sector is that shea is available in sufficient enough quantity to make exportation feasible. However, this apparent availability is counterbalanced by the lack of data on production statistics and knowledge of the qualitative profile, making it difficult to confirm and make international buyers understand that Guinea could be a viable option among the supply sources. Optimal exploitation of the resource and effective commercialization are also impeded by the weakness of the communication networks of the villages of Haute Guinea and Moyenne Guinea.

PROCESSING

A favorable dimension is the dynamism of rural women, who are the principal rural labor of this sector. Although they lack sufficient processing equipment, they put forth immense effort because they depend on shea butter for a large portion of their annual income. However, their exhausting work is not compensated fairly, due to a rather weak local market with many inconsistencies and faults in operation. This weakness has negative repercussions on the female producers' ability to provide quality products that meet requirements, and thus on the entire organization of the supply chain. These obstacles to processing shea according to good trade practices is unlikely to result in the type of regular, heavy export flow that would encourage foreign buyers to take measured risks with Guinea.

ORGANIZATION OF THE SECTOR AND ITS SUPPORT ENVIRONMENT

Mobilization of Domestic Resources

According to the studies that precede this development plan, the advantages for Guinea are based first on the government's wish to promote agricultural exports as one of the strong themes of the strategy to reduce rural poverty. Despite that declared wish, the technical and financial support for the shea sector is not consistent with the immense needs identified. This is a significant weakness that has prevented the development of a network of companies specialized in the promotion and export of shea.

Mobilization of the Development Partners

Another strength of the sector is the commitment of several development partners participating in the national rural poverty reduction strategy and working toward the Millennium Development Goals (MDG). However, this strong technical and financial support does not match absorption capacity in the field. The disparity is caused by the low level of preparation of the target beneficiaries, specifically in rural areas.

This was the case with AGOA, which facilitated access to the United States market. The operators almost missed the opportunity, due to poor responsiveness to the information provided and resistance to the adaptations necessary to upgrade production capacities and meet the standards of the products requested. The supply capacity of cosmetic butter, specifically, did not meet the demand of the U.S. market.

Financial Support Mechanisms for Commercialization

With the fragmented current supply, grouping would help create structured financing mechanisms. This opportunity is not immediately perceptible by producer organizations, given their longtime structural weaknesses. The self-promoting behavior of the players

themselves is also a serious threat to the success of any strategy to structure and modernize. More involvement and responsibility of groups of female producers could improve confidence and interest in the sector by micro-financing institutions, which would enable strengthened production, storage, and commercialization capacities.

Access to Ocean Freight

In general, the basic economic infrastructures of Guinea are not sufficient. Conakry, the economic capital, is a well-functioning sea port that can facilitate shipment of containers to Europe and North America. But the costs to travel between the principal production areas and Conakry (often a distance of 600 km or more) reduce the gain in competitiveness. Unreliable transportation logistics compounds the difficulty of delivering large flows to the port area. The impact on delivery periods and handling costs, and therefore transaction costs, is significant. These costs are hard to control, given the isolation of the principal production areas.

THE MARKET AND COMMERCIALIZATION

A Sustainable Demand with Uncertain Conditions for Access to the Market

One significant commercial opportunity is the increases demand for international shea (almonds and butter). This advantage is exploited commercially through the implementation of sophisticated technologies that enable isolation of micronutrients with high added value. By virtue of its nutritional, medicinal, and restorative attributes, shea butter has many industrial uses (base ingredients in chocolate, dairy, pastry, candy, cosmetics, pharmaceutical products, etc.).

Those attributes of shea butter are vulnerable to the techniques and technologies used for the primary processing. In most cases, the methods used in the villages result in obtaining butter whose quality and healthiness are unpredictable and not acceptable in food segments (such as chocolate factories), which represent the strongest market at this time.

This threat is amplified by the inadequate financial capacity of the female producers at the root of initial operations to invest in technological advances. In addition, the volatility of the prices on the international market leads to uncertainties and discourages female producers and national exporters from making large financial commitments to improve production. The situation becomes more complex when factoring in the strict health safety regulations that are increasingly being applied. The quality control mechanisms in the country still have structural weaknesses and disallow upgrading quality in the sector.

Development of Strategic Commercialization to Contain the Competition

Another threat to the emergence of Guinea is the local operators' poor knowledge of commercial information and relations with the international market. The field is already largely occupied, in butter and almonds, by sizable competitors such as Burkina, Ghana, Mali, Togo, Benin, and Uganda — many of which will be hard to supplant. It is necessary to develop aggressive commercialization, which would require implementation of major means of communication and promotion and would have significant financial implications.

Guinea's ability to commit to a support program for shea sector development is outlined in the SWOT analysis in Table 3 below.

Table 3: SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats)

PRODUCTION AND PICKING	
<p>Strengths</p> <ul style="list-style-type: none"> - Availability of the resource. - Dynamism of the rural women for harvesting fruit. - Origin specificity linked to the biochemical characteristics of the butter contained in the almonds (molecular abundance, various active principles, multiple nutritional, medicinal and restorative attributes). 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Knowledge on the state of resources and their sustainable exploitation still insufficient. - Lack of means of transportation enabling women to pick more fruit in the groves. - Female producers' insufficient knowledge of good picking and production practices.
<p>Opportunities</p> <ul style="list-style-type: none"> - Women have the opportunity to increase the quantities harvested in groves far from the villages. - Increased production of products meeting the standards required on the market. - Source of diversifying and generating agricultural income for women and their families. 	<p>Threats</p> <ul style="list-style-type: none"> - Productivity and phytosanitary monitoring are not systematic. - The larger money supply could lead to management conflicts for the free access to the shea groves. - Insufficient coordination in the sustainable management of the resource. - Female producers' insufficient knowledge of good picking and production practices.
PROCESSING	
<p>Strengths</p> <ul style="list-style-type: none"> - With reduced investments, the adaptation of improved techniques and processes, it is possible (training and equipment adapted on the village scale) to create specialized processing centers. - Interdependent organization of women to form a workforce available through self-employment at the processing centers. 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Rudimentary processes, insufficient productivity and tedious nature of the work to obtain butter. - Production and products not standardized based on the market requirements, in particular for export. - Female producers' lack of mastery of the handling and maintenance of the equipment. - Women do not have their own financial means to invest in adapting the processing chains. - The financing capacity of the government to support the strategies is reduced. - Financing mechanisms are not adapted to the situation.
<p>Opportunities</p> <ul style="list-style-type: none"> - Specialization of the groups in the regular production of improved commercial butter. - Increase in the development and diversification of the range of products. - Predisposition for organic production. 	<p>Threats</p> <ul style="list-style-type: none"> - Volatility of the prices, which could compromise the profitability of the investments to adapt the supply capacity in terms of quantity and quality. - Increasingly strict requirements for the phytosanitary measures conditioning access to lucrative markets. - Resistance to changing practices (empiricism vis-à-vis adopting innovations).
ORGANIZATION OF THE SECTOR	
<p>Strengths</p> <ul style="list-style-type: none"> - Political will to promote stronger, better structured peasant organizations with a sense of responsibility. - Several incentive measures for investments and export. - Presence of various support projects and programs. 	<p>Weaknesses</p> <ul style="list-style-type: none"> - The lack of desired structuring limits the internal capacity to absorb resources (technical and financial support, which are contributed by development partners). - The ineffective management of technological and commercial information does not motivate and mobilize operators to prepare themselves to cope

<ul style="list-style-type: none"> - Mobilization of technical and financial resources through bilateral and multilateral cooperation. 	<ul style="list-style-type: none"> - with the issues of the market. - The quality control mechanism is ineffective and the capacity for self-regulation of the quality on the supply chain level lacks strictness.
<p>Opportunities</p> <ul style="list-style-type: none"> - Existence of support measures for beneficiaries: training, market promotion offices. - Organizational experience (potato and coffee sectors) - Presence of parties involved to strengthen the capacities of the players. 	<p>Threats</p> <ul style="list-style-type: none"> - Lack of synergy between parties involved to support the sector. - The absence of collective structuring actions could place the consistent development of the entire sector in danger over the long term. - Without a sense of responsibility of the organizations of female producers and professionals, the permanence of the support project activities remains in peril. - Poor capacity to manage activities and capital of the groups. - The individualism of the players is an obstacle.

DOMESTIC COMMERCIALIZATION AND EXPORT

<p>Strengths</p> <ul style="list-style-type: none"> - Measures to encourage export and facilitate trade are proposed by the government. - Will and ambition of exporters to earn new market shares. 	<p>Weaknesses</p> <ul style="list-style-type: none"> - Insufficient knowledge of users' needs: lack of "product-market" contact strategy to satisfy customers' requirements in relation to the principal and different segments of the worldwide shea industry (food, cosmetics, pharmaceutical). - Distance of the production areas from the access to maritime transport. - Insufficient transportation, market and communication infrastructures. - Poor access to financing for the commercialization campaign. - Insufficient promotion to develop the domestic consumption and replace imported fats (food and cosmetic). - Poor organization of the trade system gives players downstream a larger margin s [sic.] beneficiaries while those upstream are poorly compensated and motivated.
<p>Opportunities</p> <ul style="list-style-type: none"> - Existing demand growing for the food and cosmetics industries and in pharmacology for new applications. - Diversification of the range of shea-based products for the local market (culinary butter, cosmetics and soap making) to increase domestic consumption. - Preferential agreements for trade with AGOA for the American market and SA for the European Union; ECOWAS for sub-regional markets. 	<p>Threats</p> <ul style="list-style-type: none"> - Strong competition on the international market (countries with greater production potential and a strong export tradition: Burkina, Mali, Ghana, Nigeria, Togo, Benin, for example). - Fungible market with substitution possible by other sources of fat in chocolate factories. - Female producers unmotivated to improve quality due to: the volatility of the prices, unfair distribution of the margins. - Lack of integration of ethical and environmental concerns (concepts relative to gender and sustainable management of the natural resources). - Fraudulent trade practices and informality reduce commercial competitiveness, especially in exports. - Lack of legal and judicial guarantees does not inspire confidence in establishing sustainable commercial contacts based on the markets' formalization through contracts. - Fluctuating parity of the Guinean franc. - Lack of reward for the quality of the product.

SUMMARY OF THE CHALLENGES AND ISSUES

The following chapter will specify a proposed action plan for strengthening the production and commercialization chains of shea butter and almonds in Guinea. Consistent implementation of the plan could contribute to the emergence of commercially viable solutions for creating economic and financial benefits in the sector.

Necessary Upgrade of the Supply Capacities

The analysis of market opportunities is intended to establish the importance of Guinea placing itself in the butter segment of the cosmetics industry in Europe and North America. To reach that goal, intensive work on improving the supply capacity is required.

The current organization of butter production and commercialization activity in villages is a hindrance to real participation in the export cosmetics segment. The assessment is that, in most cases, the current supply is not completely adapted to satisfying the requirements of the cosmetics market, which is the highest paying.

Lack of Motivation of the Female Producers

While female producers possess traditional knowledge on picking, preserving, and processing almonds, they do not apply good production practices regularly. Currently, the only markets accessible for female producers are village stall markets. Butter purchases are only rarely based on level of quality; the value addition of better quality is not rewarded. Female producers, therefore, have only the local market on their minds, even though their locally purchased products will have difficulty meeting quality standards in the cosmetics segments in Europe and the United States.

Poor Specialization of Female Producers for Access to the Market

Currently, women producing shea butter and almonds operate individually in order to simultaneously take care of family needs as they arise. This affects the sector in the following ways.

- Supply sources are not well regulated. Supply is fragmented and mixed and therefore unreliable in terms of quality, quantities available, and pricing.
- The techniques used are not standardized and do not conform to international market requirements.
- Operators do not realize economies of scale due to the vast geographic distribution of supply sources.

Given the extent of the challenge, and the large number of locations and women to reach, it seems natural and necessary to organize a wide range of suitable technical and financial resources.

PROPOSED PLAN OF ACTION

OBJECTIVES AND RESULTS EXPECTED

The general objective of this PDP is: “To improve the competitiveness of the shea sector in Guinea and increase incomes in the sector.” The plan is based on studies conducted previously and interviews carried out by consultants during the course of this mission. Commercially viable solutions are sought based on the critical problems of access and development of the markets for shea products from Guinea.

The weaknesses frequently noted in the SWOT analysis — obstacles to commercial development — are summarized as follows.

Adaptation of the Supply

- Insufficient and variable quality of the raw butter produced in villages
- A poorly diversified supply, limited at this time to unrefined raw butter
- Low productivity and processing tools poorly adapted to the specifications of the market
- Little specialization in the processing of products with high added value (culinary butter, cosmetic and therapeutic products, etc.)

Strategic Commercialization

- Insufficient knowledge of trade systems and related market information
- Absence of organizations to promote commercialization in large markets for raw butter and by-products
- Poor responsiveness of merchant networks to market opportunities
- Poor integration of trade systems and reduced supply capacity for large markets

Access to Adapted Financing

- Reduced capacity of financial means and credit management
- The lack of adapted financing to cope with equipment and commercialization credit needs

To address these weaknesses, the general objective of this plan is broken down into three intermediate results:

- Develop the sustainable production of shea products by adapting the supply to the requirements of the market
- Increase the trade of shea products
- Improve access to financing to support the processing and commercialization of shea products

These objectives are further broken down into products corresponding to operational results. For each product, the operational methods and principles are described. Detailed actions and

associated performance indicators are provided in Appendix I, in a diagram of the implementation of the action plan.

The execution of the selected activities will improve the current situation and satisfy the expressed main expectations of increased effectiveness of business management skills; improved production, processing, and commercialization technologies; conducting high-performance production, with constant product quality; increased business opportunities and mechanisms; and access to increased financing. These results will be realized through a series of activities planned over the short term, medium term, and long term in collaboration with providers acting as implementing agencies.

The key beneficiaries will be the upstream producers and agro-industry developers involved in processing shea, as well as the principal players involved in the promotion and market launch of the shea product supply.

In the short term, it will be necessary to promote use of improved shea production and processing technologies by rural female shea producers and private agro-business players. This will enable a market launch of a wider range of products adapted to the local and sub-regional demand. The interventions will target players with potential to increase production by diversifying and perfecting adapted products and by developing sales on the local, sub-regional, and international markets.

In the medium term and long term, the plan is based on heavy involvement of the agro-industry players. This will stimulate production based on the diversification and control of the quality of the products produced, with a basic orientation toward the needs of the market. These efforts to adapt products will lead to new international market opportunities.

Implementation will be coordinated to permit the development of commercialization activities and promotional support, in the following sequence:

- Short term: Ensure the local market supply of diverse products for end consumption (butter for culinary, cosmetic, and therapeutic applications, etc.)
- Medium term: Develop access to sub-regional and international markets for shea butter and by-products
- Long term: Develop exports and access to certain specific markets (organic butter, through fair trade systems, etc.)

The principal areas of activity will be training to reinforce the management capacities of players in the value chain; collection, processing, and dissemination of market information; market promotion of Guinean products; and accessing financing (investment and commercialization credit) adapted to the needs of the players in the sector.

The results framework is presented in the following diagram, with the hypothesis that consistent and effective implementation of the activities will permit gradual diversification of shea butter products, improved productivity, and increased sales in the local, sub-regional, and international markets. A reference sheet of the performance indicators is provided in Appendix 2.

Results Framework

Results and Activities Related to the First Direct Objective (1):

“Increase the sustainable production of shea products by adapting the supply to the requirements of the market”

Support will be targeted to cover trainings; learning new and improved methods of processing, negotiation, and commercialization, etc. Female producers and agro-industry developers have learned good techniques for processing shea butter, but they must be given support to ensure that they use the recommended techniques consistently and regularly through a principle of self-regulation in order to raise the level of quality. The development of training modules will also permit orienting the players to business strategies to further increase added value.

Guinean producers will need to supply the market with quality products in compliance with accepted standards and adapt to the demand of customers. Therefore, another central goal will be to increase targeted players’ awareness of the quality characteristics expected by their customers. Commercial success will depend greatly upon the success of this component.

RESULT 1.1: LARGE-SCALE TRAINING

Training on Processing Technologies. Training programs for female producers — the intermediaries of the commercialization chain — must be intensified, while taking into account education level and literacy. Program content should focus on optimizing the technical ability of the female producers. The training programs underway, with the support of the ARCA and CECI/ADIC projects, are already a good foundation and must continue and expand to all shea areas.

- 1.1.1. Identify improved techniques and technologies for creating products that satisfy quality requirements
- 1.1.2. Prepare standard operating procedures manuals on almonds, butter, packaging, and quality control, for use by female producers and small agro-industry businesses being established
- 1.1.3. Hold trainings on processing procedures, in particular regarding the application of good manufacturing and hygiene practices; and establish an awareness of the commercial importance of food safety

Training in Commercialization and Management (controlling costs, setting prices, market analysis, etc.). In interviews with female producers, agro-industry developers, and trade intermediaries, consultants noted gaps in knowledge of marketing approaches, indicating that training in this area must be increased. For sales representatives, important themes will be the examination and assessment of signs of quality, the organization of supply networks, and controlling costs.

Given the current state of the world market, it is important to work on preparing a commercial strategy that addresses the key areas of price competitiveness, product compliance, and logistics (order turnarounds, transit and transport operations, packaging, etc.). Market penetration, especially export markets, requires a marketing approach well adapted to the contexts of the various targeted countries.

New agro-industry developers in the sub-sector of second shea processing must be trained to integrate into their strategies the four essential factors commonly used in the development of a marketing plan — “the 4 Ps”: price (well calculated and competitive); product (characteristics and requirements of customers); place of sale (distribution system); and publicity (promotion of the product). The players involved will need to achieve an optimal combination of these factors.

Over the medium term, direct players (female producers, wholesalers and exporters) will need to better control costs in order to reduce prices for consumers. Regular record keeping should be encouraged, to enable streamlining in decisions and planning and when establishing investment, production, and commercialization programs, regardless of the size of the units.

For private developers, assistance and training need to be intensified to ensure sufficient adaptation of commercialization concepts. The proposed actions are:

- 1.1.4. Provide training modules to reinforce developers’ basic knowledge of the “4 Ps” marketing concept, related specifically to shea
- 1.1.5. Conduct post-training monitoring of the developers through supporting the establishment of business plans and banking records

RESULT 1.2: PROMOTE DIVERSIFICATION OF THE RANGE OF BY-PRODUCTS PRODUCED

It is proposed that actions focus on enabling players to commit to creating products with high added value. Therefore, specific processing and packaging units that provide a range of finished products must be promoted and facilitated. These specialized units must develop more homogeneous and consistent shea butter for use in culinary preparations and cosmetics manufacturing. Locally, this would lead to creation of added value, jobs, and the replacement of similar imported products. Rural female producers and small agro-processors being developed could establish locally stable, lucrative markets that guarantee the continuity of their activities.

The actions listed below will contribute to the development of the sub-sector of raw shea butter processing and by-products (with more added value). The actions will help local producers master basic techniques, which will aid in meeting the quality requirements of end consumers.

- 1.2.1. Develop training programs on the manufacture of diversified products, creating a labor force specialized in this production
- 1.2.2. Train developers on the development of by-products (range of cosmetic, culinary, and therapeutic products, etc.)
- 1.2.3. Popularize on a large scale new technologies for the production of quality products in compliance with requirements
- 1.2.4. Promote the acquisition of second processing equipment (traditional soap making, small equipment for cosmetic preparations, etc.) in some village groups

- 1.2.5. Promote the insertion of urban developers to create production units for small soap and cosmetic products intended for the local and sub-regional market

RESULT 1.3: SUPPORT FOR THE ORGANIZATION OF GROUP PURCHASING OF PACKAGING

With regard to the technical choice and supply of packaging, there are no definitive solutions to propose. However, the options to be taken could be based on market segments in terms of buyers' requirements. The practical solution to apply at this time is organizing group purchasing of plastic buckets and barrels, for economy-of-scale reasons. In all cases, the current use of plant leaves as packaging must be completely eliminated, due to the subsequent contamination (color fixation, development of microorganisms, oxidation phenomena, etc.) of the product.

Improving the packaging and commercial presentation of the products should be considered a crossover element, given the roles it plays: preservation of the initial quality, impact on consumer satisfaction, and impact on cost.

The actions selected are:

- 1.3.1. Supporting the adoption of modern packaging and discouraging the use of plant leaves, which is currently widespread
- 1.3.2. Promoting and coordinating the use of appropriate packaging on the national level
- 1.3.3. Organizing group purchases for economies of scale
- 1.3.4. Establishing a mechanism for supplying favorable prices for the groups from the purchasing center created

Some steps for managing packaging are proposed in Appendix 7.

RESULT 1.4: NATIONAL-SCALE COORDINATION AND PROMOTION OF THE QUALITY APPROACH

It is essential for players to consider “customer satisfaction” a basic dimension of any quality approach. Presenting products in compliance in order to be competitive is a precondition for obtaining a good connection to the international market.

For this reason, it is essential to make the connection between the product characteristics sought by customers — specifically on the international markets — and the methods of obtaining products from villages and through agro-processors. Responsibility for monitoring the supply chain falls to the shea butter or almond production organization, so projects must strengthen capacity in order to have at hand female producers or small agro-processors who can improve product compliance. These producers and processors must be well trained, competent to produce shea butter and almonds, and willing to continuously improve quality.

It is clear that players of the shea sector have not yet acquired the rigor and formalism required to establish a quality approach quickly. The consistent and effective implementation of a quality approach rests on a firm commitment of all players and the support of the government (or its development partners, notably the regional programs of ECOWAS). Methodological support and the contribution of specific skills will be necessary. Intensive

training and awareness programs must also be increased to ensure adaptation of the basic concepts.

The support of national quality management institutions must be obtained. The adoption of common standards and regulations to be respected will greatly facilitate establishment of a quality control system and strengthening laboratories' capacities for physio-chemical analysis of shea products.

The support plan will include the following measures:

- 1.4.1. Train female producers in good practices for obtaining quality dry almonds and raw butter in compliance with standards.
- 1.4.2. Select developers based on their commitment to establishing and properly executing a coordinated quality management plan.
- 1.4.3. Train the members assigned to quality management.
- 1.4.4. Develop a control capacity through national laboratories.
- 1.4.5. Promote a national certification system for organic labeling and for fair trade.
- 1.4.6. Field monitoring of use of good production practices, record keeping on the production level, and management of products. Collect and maintain analysis results, use results to ascertain by-products and effects of the processes on quality, and find solutions to the problems identified. Here, the principles of the approach are simple and common sense: no quality without control, no control without measurements, no measurements without records, no records without analysis, no analysis without corrective actions, no corrective actions without validation of the results.
- 1.4.7. On the production unit level, provide small equipment kits to analyze characteristics such as acidity, moisture, temperature, etc.

Some steps for managing quality are proposed in Appendix 6.

RESULT 1.5: SUPPORT ORGANIC SHEA BUTTER PRODUCTION

An organic shea butter and almond production program will include a collection phase to amass up-to-date information. The priority activities, which will result in the formulation of business plans for these organic products, will be:

- 1.5.1. Identify high production areas where shea almonds do not run the risk of contamination and chemical pollution
- 1.5.2. Identify organic certification criteria
- 1.5.3. Identify the costs to obtain and maintain certification
- 1.5.4. Develop systems to control and isolate the quality of the organic shea butter and almonds
- 1.5.5. Collect the existing data on characterizing the origin of the product

- 1.5.6. Establish collections of documents on the characterization of products based on origin for the purpose of origin labeling (physio-chemical and organoleptic characterizations of the almonds and butter of the different varieties based on origins)
- 1.5.7. Promote the concept of organic production to encourage the specialization of certain areas and professionalization for supplying niche markets

RESULT 1.6: BETTER PROTECTION AND SUSTAINABLE DEVELOPMENT OF THE RESOURCE

Environmental preservation is a burning issue due to current exploitation methods of shea, which could cause definitive deterioration of the resource. The establishment of monitoring mechanisms must be encouraged to ensure shea's protection and sustainability. It will be necessary to orient and expand the area for action, making it possible to:

- 1.6.1. Encourage the general use of grafting and regeneration techniques with a view to domesticating shea and promote industrial plantations
- 1.6.2. Establish monitoring and pest control mechanisms (parasitism such as the development of *Ioranthus*, recognized as a serious threat)
- 1.6.3. Promote the creation of local agreements (in each village and their CDR) to organize and regulate the management of protected shea areas

Results and Activities related to the Second Direct Objective (2):

“Increase the trade of shea products”

This strategy is aimed at encouraging the creation of small agro-processors specialized in the promotion of shea butter collected in the production areas. The emergence of reliable supply chains to satisfy the market requirements will demand specialization of the production areas in more professional commercialization.

With regard to the market, groups and their unions must be committed to modern trade practices based on formalization through contracts and compliance with product quality specifications. In-depth knowledge of the segmentation and status of the competition on the markets will be important in order to adapt their supplies in terms of intrinsic quality, packaging, and price.

To better establish the “products – market segment” connections, the generalized use of scientific techniques among female producers, small agro-processors, and exporters would help make them understand the need to preserve the attributes that create the commercial value of butter and the reasons for defining quality levels.

In the medium term, priority must be given to the development of direct trade systems. This can be accomplished by taking advantage of the experience acquired in the partnership formats established in the framework of fair trade, and in particular for the development of markets for unrefined raw butter for use in cosmetics.

The operational objectives and actions will be as follows.

RESULT 2.1: INCREASE MARKET SHARES IN BETTER-PAYING SEGMENTS OF THE VALUE CHAIN

Partnership and contract formalization between female producers and exporters or small businesses that process butter will be encouraged. This will improve the village-level performance of the shea value chain, from picking in the groves to obtaining the butter and the subsequent commercialization.

It will be essential to provide as frequently as possible information on prices, volume, and quality practiced in the local, sub-regional, and international markets, in order to put all players in contact commercially.

The priority actions selected are:

Market Information System

- 2.1.1. Collect, process, and disseminate commercial information on the profile of the market opportunities (local, sub-regional, and international)
- 2.1.2. Produce market analyses and studies, in particular for prices, margins, and characteristics of the demand in terms of volumes, quality, and price
- 2.1.3. Conduct awareness and information campaigns on favorable market opportunities (communication via rural radio or lectures to associate the need for quality products and the impact on the conditions of access to the butter market)

Commercial Relations

- 2.1.4. Establish direct partnerships between female producers, agro-processors, and distributors in a way that encourages the prompt flow and exchange of technical and commercial information
- 2.1.5. Participate in commercial events such as fairs to promote shea and the label “Produced in Guinea” in order to promote the country’s supply capacity in the world market
- 2.1.6. Promote commercial relations with foreign customers: Invite potential customers and organize itineraries (through a commercial support and relationship marketing service with buyers)
- 2.1.7. Commit buyers (especially for export) to giving producers price incentives, to improve the quality of the products offered
- 2.2.8. Facilitate negotiations and secure regular delivery contracts with groups of industrial buyers and distributors

Organization of the Supply

- 2.1.9. Specifically create groups of female shea producers or village cooperatives specific to shea exploitation (such as Cooperative of Female Shea Producers, or CPK) and encourage the emergence of unions of shea cooperatives, (such as the Federation of Cooperatives).
- 2.1.10. Provide shea processors the most advanced information possible on process/products relationships and information on the commercialization of the categories of products comprising their supplies

- 2.1.11. Analyze options for establishing rural purchasing agencies to organize the female-producer supply (installation of packaging and storage infrastructures, enabling long-term preservation of products)
- 2.1.12. Support the compliance control mechanism through laboratory tests on samples taken on a large scale to characterize the current supply

RESULT 2.2: REINFORCE COMMUNICATIONS AND MARKETING ACTIVITIES FOR SHEA PRODUCTS

It is necessary to take measures aimed at carrying out a major communication and awareness campaigns on shea. The communication plans will encourage the adoption of improved processes and provision of quality, compliant products. It is also necessary to keep the players well informed through broad distribution of market information, sufficient to develop the ability to anticipate changes in market trends.

To better publicize shea, aid partners should be able to sponsor activities in collaboration with the unions that currently represent female producer groups. Producers will need to overcome the mistrust of some classes of consumers concerning the quality of the shea-based products (culinary and cosmetic butter) produced locally.

A standard method for publicity would be to develop press kits that present in-depth information on shea, including its production, processing and distribution systems, players involved, market, consumption methods, nutritional assets, recipes, etc. The press kits would be distributed to hosts of nearby radio stations to encourage them to contribute to the promotion of shea.

Another step is to plan, in partnership with medical specialists, nutritional programs to inform the general public of the nutritional and therapeutic benefits of shea. This same information could also be presented in the form of leaflets for broad distribution. Talks and debates on the verifiable and purported virtues of shea use could be of interest to consumers.

A published directory of female shea producer unions and importers in Europe and the United States could be of use commercially. This type of promotional medium could prove to be a catalyst in the development of commercial relationships and cooperation between the supply and demand camps. Beyond addresses, listings could include other types of information, such as the party's export approach, regulation of products, and foreign buyers' terms (quantities, prices, periods, payment methods, etc.).

In the medium term, measurements for product compliance certifications as well as the qualification processes of geographic areas will lead to recognition of "Guinean origin" sign of quality. It will be necessary to put forth all the effort possible to have the origin better identified and a legitimate quality label established. A usable Guinean sign has already been created on the INNEM level, under the label "NG" for Norme Guinéenne.

The Internet is another medium for international promotion and commercial development. Thousands of promotional pages on shea are already on the Internet, and specialized Web sites could present information on Guinean shea butter and the "Produced in Guinea" label.

The actions selected are:

- 2.2.1. Develop information and awareness campaigns, utilizing diverse media (press kits, promotional materials, audio-visual productions, print media articles, documentary films, leaflets, Web sites, talks and debates in villages)
- 2.2.2. Establish a base of information on the sector and create presentations on the business development opportunities in Guinea, in order to attract tropical product wholesalers and large shea manufacturers
- 2.2.3. Publish and distribute directories enabling potential customers to identify outlets and supply sources for large orders
- 2.2.4. Encourage the use of appropriate, attractive packaging and labeling in order to better promote the Guinean origin and product authenticity
- 2.2.5. Widely convey the benefits of dietary consumption of butter and its use in the best cosmetic products
- 2.2.6. Target groups of buyers to receive samples and promotional materials
- 2.2.8. Facilitate the creation of national and sub-regional networks between the different players of the shea sector

RESULT 2.3: DEVELOPMENT OF THE COMMERCIAL PARTNERSHIP

The implementation of the Integrated Framework Project has aided in the market promotion of shea. Such sub-regional projects actively participate in the development and promotion of shea on the world market. These projects represent a good opportunity to reinforce the commercial knowledge of operators and improve their access to world markets, through:

- 2.3.1. Monitoring or participation in the various networks of sub-regional shea projects (specifically WATH, PROKARITE and MISTOWA)
- 2.3.2. Greater involvement of national, sub-regional, and international organizations in the management of export development and promotion
- 2.3.3. Insisting that officials improve research and development and quality control services and establish standards (or adopt sub-regional standards for shea products)
- 2.3.4. Encouraging commercial partnerships in production areas, to ensure the regular supply of quality shea butter at manageable prices based on forward contracts or agreements
- 2.3.5. Promoting commercialization practices through unionizing the supply from villages, which will streamline management of supply systems between small agro-processors, local exporters, and cosmetics manufacturers abroad

Results and Activities relative to the Third Direct Objective (3):

“Access to increased financing to support the processing and commercialization of shea products.”

RESULT 3.1: ACCESS TO CREDIT TO PURCHASE PRODUCTION EQUIPMENT AND COMMERCIALIZATION FUNDS FOR FEMALE PRODUCERS IN GROUPS AND PRIVATE AGRO-PROCESSORS

For the sector to reinforce local consumption and acquire new export markets, significant attention must be paid production equipment. Major financial resources are required before equipment and shea commercialization practices can be rapidly modernized. The strategy aims to support the promotion of new investments and the emergence of a network of small agro-processors that will specialize in producing a range of products with greater added value.

In general, the developers concerned do not meet the criteria for bank loans, and they cannot effectively negotiate directly with financial institutions. Therefore, mechanisms must be adapted to their cases. New financial products must have easy terms with regard to interest rates, terms, grace periods, forms of guarantee, etc. to encourage female producers to obtain equipment credits and commercialization funds.

Another step towards commercialization will be the development of tailored mechanisms for financing (warranty and joint risk capital formats) with the help of existing unions. The products of the groups or cooperatives will be held in stock in union-level warehouses, serving as a guarantee for the financial institution. The female producers will thus be able to obtain swing credit prior to the sale of the grouped stock.

Special requests must be made to organize funding from some backers. These will be determined based on their commitments in the various poverty reduction strategies, and in particular those that affect rural women.

The priority actions taken are:

- 3.1.1. Contribute to financial intermediation through the creation of bank records (or an adapted business plan), to prove the financial and economic profitability of shea butter and almond production and support the developers vis-à-vis financing agencies
- 3.1.2. Promote adapted financing programs that are accessible to rural groups and small agro-processors participating in commercial shea production
- 3.1.3. Seek special lines of credit to finance the equipment of village processing units and support the commercialization of shea on the union level (joint risk capital formats will be encouraged in this case)
- 3.1.4. Facilitate access to the appropriate equipment for processing (primary and secondary) through financing adapted for the development of shea agro-processors

The diagram on the following page shows the linkages over time of the support offered by the action plan, the evolution of the diversification of shea-based products, and the intended markets (local, sub-regional, and international).

Linkage Diagram: Production/Market/Technical Support Offered (Short, Medium and Long Term)

[dotted line indicates →] Production and Market to be Developed			Technical Support Activities																
Products/Markets Linkages			Adaptation of the Supply				Commercialization			Financing									
Production and Players	Family farms Village groups Unions of groups	Shea almonds	Large-scale Training	Quality Approach	Organization of the Supply	Access to Packaging	Resource Protection/Local Agreements	Organic Production Process	Market Information System	Promotion and Communication	Commercial Contact	Sustainable commercial partnership	Financial Intermediation	Technologies and equipment financing	Commercialization campaign financing credits	Short Term (1 year)			
		Unrefined raw butter (village)																	
		Improved village raw butter																	
		Standard soaps (household)																	
		Traditional cosmetic products																	
	Small, local agro-processors Private developers (rural or urban)	Raw village butter to be improved																	
		Unrefined raw butter (semi-industrial)																	
		Standard soaps (household)																	
		Shea-based cosmetics (skin care)																	
		Shea-based cosmetics (hair care)																	
		Special culinary butter																	
		Shea-based therapeutic formulations																	
		Luxury soaps																	
		Luxury cosmetics																	
		Certified organic butter																	
		Other new certified products																	
		Domestic Markets - Village collector merchants - Urban wholesalers														Sub-regional Markets - Local wholesalers - Foreign wholesalers	International Markets - Local companies - International companies	Markets and Players	Long Term (3 years and longer)

LIMITING AND RISK FACTORS

The players in the shea sector must have access to appropriate technical and financial means. Otherwise, the actions planned will be insufficient to achieve significant results in a short period.

The competitiveness of the sector is reduced by problems with infrastructure — roads, electricity, telecommunications, and other logistical aspects are insufficient or unavailable, particularly in rural areas.

Players and development partners have little awareness of the business opportunities and issues for the country, and female producers show a general lack of interest in investment, due to the low payment of their products. These factors could negatively affect the effective and efficient implementation of this shea product development plan in Guinea.

Previous trainings on organizational management have not had much success, with low capitalization and appropriation by beneficiaries. Resistance could continue and prove to be a limiting factor.

With regard to quality management and research, the lack of means of action and the inappropriateness of texts used are obstacles to carrying out routine activities for new product development, phytosanitary inspection, and compliance testing.

CONCLUSION

This Shea Product Development Plan (PDP) proposal was prepared taking into account the concerns and expectations of the beneficiary groups. It also considered the commercial issues of the local and international markets as well as the challenges to be addressed in order to increase shea's contribution to the national economy.

The effective and efficient implementation of the proposed actions will improve the competitiveness of the entire shea sector. The objectives and actions are more focused on the level of activities to facilitate upgrading production and developing trade systems. Improvements are sought on all sides, which will enable production units in particular to adapt their products to the requirements of the market by using more efficient technologies and standardized operating procedures. In this way, producers will be able to provide a better quality/price ratio and increase their commercial appeal, allowing access to new market opportunities. Producers will use data assembled through improved information mechanisms. The economic situation of the rural female shea producers will be improved as well, thanks to increased production levels of improved butter and the subsequent generation of additional income.

This PDP can serve, in an initial phase, as a frame of reference for the development and commercialization of shea in Guinea. Its implementation requires a strong commitment of the players and partners who want to support this process to ensure adequate mobilization of the technical and financial resources.

The government must encourage this mobilization by integrating shea into strategic development plans as a priority sector. Shea could play a critical role in reducing poverty, improving the material and emotional welfare of women, particularly in Haute Guinea. The best developments will also trigger spin-off effects that will be economically important to all groups of beneficiaries of this PDP.

Financial backers and technical support partners will reinforce the capacity of the sector's operators — particularly women, who are the bedrock of the shea system. Based on assessment studies conducted by the ARCA project, the plan outlines priority areas of intervention for which a strategic partnership must be developed. This will ensure rational use of the resources intended for the technical and commercial reinforcement of the sector. The parties responsible for implementation must set out to plan activities and enter into partnerships that supply support services which will be adequate for the needs of the sector.

The PDP establishes several performance indicators, enabling periodic assessment of the results expected based on operational and development objectives. Efficient monitoring and assessment tools will be essential to measuring the progress and bringing corrective solutions in order to create the best chances of success for significant improvement in the development and commercialization of shea in Guinea.

RECOMMENDATIONS AND SUGGESTIONS

The authors suggest broad sharing the proposed actions detailed here, with the intended outcome of expressions of interest by the government, development partners, and shea player groups. For the mobilization phase, the following recommendations are made.

ESTABLISHING A STEERING COMMITTEE

In order to create an effective implementation structure, national-scale research could be undertaken by a steering committee. The committee should enlist Haute Guinea producer union members, wholesalers, and exporters. In addition, representatives of agro-business support organizations met during this mission could be invited to form an initial work group. This structure will enable the authorities to focus on their specialized areas of competitiveness (quality, price, profitability, logistics, development of partner relations, etc.).

The organizations include the ACA Office in Conakry, specialized in market information systems; MAROPA in Kankan, specialized in management of rural organizations and market organization; MRE in Kankan, specialized in microfinancing; ATC in Dabola, specialized in rural organization and cooperative organization; CIEPEX in Conakry, specialized in market promotion; CAFEX in Conakry, specialized in export procedures; CPTI in Conakry, specialized in R&D (agri-food processing technology); and IRAG in Conakry, specialized in R&D (agro-forestry) and in post-harvest development technologies.

REGARDING MOBILIZATION OF RESOURCES

The government must support the PDP financially and technically by facilitating the appeal to development partners and directing funding through special budgets (HIPC, for example — components of the PRSP or MDG). The government should also contribute to promotional campaigns on Guinea's potential and the importance of improving the quality and compliance of the Guinea origin.

Development partners will be able to support the creation of structured financing mechanisms. This support could include partnering with financial institutions to analyze the decentralized financing system currently in place, so new financial products could be proposed and adapted to the needs of rural female producers. International organizations that support rural credit can be involved by participating in the creation of special equipment funds or guarantee funds for players. Such new sources of funding would allow the upgrade of Guinean shea butter to begin in the villages, at the start of the supply chain.

For shea information centers to maintain access to accurate data and the most up-to-date facts, they must be supplied with upgraded computer equipment.

By realizing the Millennium Development Goals (MDG), UNDP can support these types of initiatives, as can the United Nations' other involved agencies (UNIFEM, CCI, UNCTAD, FAO, UNIDO, etc.).

A special fund can be established to support the diversification of shea products through the development of pilot projects. These projects could include the creation of small enterprises that receive specialized supervision in technology, marketing, and quality; market segments linkages, from the village-level production stage; and R&D projects aimed at diversifying the range of shea-based products or developing of an organic sub-sector.

Technical cooperation agencies (AFD, CIDA, AFRICARE, European Union Commission) that have programs to support the development of social economics can be targeted, as can international NGOs whose programs promote economic activities that generate income for women.

REGARDING MANAGEMENT OF QUALITY

The priority will be to create a network of specialized trainers who will be responsible for supervision of female producer groups to support the approach. Bilateral or international and sub-regional cooperation organizations can be used to financially support the establishment. The training of trainers on the union level will be given priority, through facilitating access to self-training centers, multimedia tools, centers specialized in the dissemination of information and market analysis production, and subscriptions trade publications on the oleaginous fat sector.

Another method to accelerate improvement in quality is soliciting sponsorships of small rural cooperative enterprises by companies in Europe and the United States, and establishing contractual agreements. Sub-regional programs on shea (PROKARTE, WATH, ECOWAS Quality Project) can be called upon for support.

REGARDING THE MARKET INFORMATION SYSTEM AND COMMERCIALIZATION

Insist that the ACA expand monitoring of shea markets throughout the country and in the sub-region. The ACA partnership with the MISTOWA regional project, which works closely with the WATH program, is favorable to the mobilization and dissemination of a varied range of technical and commercial information. For the international market, synergy must be sought with the Integrated Framework Program under the Ministry of Trade, Industry and Small Business (MCIPME).

APPENDIX A

Table 4: Objectives and Results Linkage Framework

Objectives	Expected Results	Objectively Verifiable Indicators (OVI)	Means and Sources of Verification
<p>Development Objective:</p> <ul style="list-style-type: none"> Improve the competitiveness of the shea sector in Guinea and increase income in the sector. 		<p>Impact:</p> <ul style="list-style-type: none"> Absolute income in the shea sector and annual percentage of the change in income of the female producers and local agro-processors from sales of shea products (almonds and butter) in the Haute Guinea region and in the country. <p>Critical Factors:</p> <ul style="list-style-type: none"> Low mobilization of financial and technical resources Instability of international prices and variation of the exchange rates for the Guinean Franc Low awareness and motivation of the players due to prices 	
<p>Objective 1:</p> <ul style="list-style-type: none"> <i>Increase the sustainable production of shea products by adapting the supply to the requirements of the market.</i> 		<ul style="list-style-type: none"> - Quantity of products in compliance on the market - Increase in the production capacity of the units (rural traditional - almonds and raw butter and urban agro-processors - by-products) - Number of units using improved production technologies - Adoption of sustainable management plan for exploitation of the shea resource. 	
	<p>Result 1.1: Large-scale training</p>	<ul style="list-style-type: none"> - Number of training modules (topics disseminated) - Number of training sessions - Number of groups of female producers trained 	<p>Curricula and session plan of the trainings Testimony and level of satisfaction; Quality of the products</p>
	<p>Result 1.2: Promotion diversification of the range of by-products produced.</p>	<ul style="list-style-type: none"> - Number of new products promoted - Number of units that produce a range of several products - Local consumption is increased with the market launch of products with higher added value (culinary butter and cosmetic products are produced locally) - Sales made 	<p>Technical reports Market studies Customer testimony</p>
	<p>Result 1.3: Support the organization of grouped purchasing of packaging</p>	<ul style="list-style-type: none"> - Quantities of packages purchased, savings in terms of prices, economies of scale realized for the female producers 	<p>Technical reports Field visits Testimony of the beneficiaries</p>
	<p>Result 1.4: Coordinate and promote the quality approach on the national scale.</p>	<ul style="list-style-type: none"> - Adoption of quality standards - Level of appropriation of good practices by the processing units - Number of quality control [sic.] - Certification feasible; Quality label used in export 	<p>Technical reports Evaluation of the quality of the butter obtained Evaluation of the product samples</p>

Objectives	Expected Results	Objectively Verifiable Indicators (OVI)	Means and Sources of Verification
Results1.5: <i>Support the production of organic shea butter.</i>	<ul style="list-style-type: none"> - Feasibility conditions are established; - Number of organic production sites; - Quantities of organic-certified products sold; - Level of financial profitability (compared to conventional butter) 	Evaluation Organic production sites Evaluations by laboratories and quality control certificates Customer testimony (in terms of satisfaction)	
Result 1.6: <i>Better protection and sustainable development of the resource</i>	<ul style="list-style-type: none"> - National shea resource management plan is established and local agreements are adopted - Number of villages that use grafting, regeneration and plantation techniques - A geographic information system (SIG) is created, monitored and disseminated - A catalog based on the physico-chemical parameters by geographic origin in connection with the SIG is established and monitored 	Technical reports SIG dissemination materials (hard copy documents, CDroms, Internet, etc.)	
Objective 2: <ul style="list-style-type: none"> • <i>Increase the trade of shea products</i> 	<ul style="list-style-type: none"> - Models and business connections between the rural female producers, local agro-processors and importers (number of commercial contracts) - Volume of butter and almonds sold by the female produced - Volume of processed products launched on the market by agro-industry and exporters - Number of new shea butter-based products existing on the market - Number of export markets (sub-regional and international) 	Network of exchanges with the production areas and abroad; Level of satisfaction of the beneficiaries Technical reports Export statistics Customer testimony (in terms of satisfaction)	
Result 2.1: <i>Increase market shares on better paying segments of the value chain</i>	<ul style="list-style-type: none"> - Level of shea butter exports per year for the cosmetics industry - Higher prices obtained with improved quality - Number of new processing units created and managed - Number of new customers and number of contracts honored (local and export) - Number of countries canvassed and quantities sold (export) - Number of new markets accessed 	Technical reports Media and promotional materials published	
Result 2.2: <i>Reinforce communication and marketing activities for shea products</i>	<ul style="list-style-type: none"> - Number of media campaigns - Participation in commercial events - Base of information on the shea market available 		

Objectives	Expected Results	Objectively Verifiable Indicators (OVI)	Means and Sources of Verification
Objective 3:	Result 2.3: <i>Development of the commercial relationship</i>	<ul style="list-style-type: none"> - Activities carried out in networks with sub-regional programs - Number of new customers and number of contracts honored (local and export) - Number of countries canvassed and quantities sold (export) 	Technical reports Export statistics Customer testimony (in terms of satisfaction)
<ul style="list-style-type: none"> • <i>Increased access to financing to support the processing and commercialization of shea products</i> 	Result 3.1: <i>Access to credit to purchase production equipment and commercialization funds for female producers in groups and private agro-processors</i>	<ul style="list-style-type: none"> - Amount of financing granted - Number of beneficiaries with access to credit for investment in processing equipment and for the commercialization of shea <ul style="list-style-type: none"> - Amounts marshaled and distributed; - Number of new financial products in place; - Number of files submitted; - Number of female producers who obtained financing (equipment or commercialization) 	Technical reports Visit sites granted credits Testimony of the beneficiaries

APPENDIX B

Performance Indicators Reference Sheets

A General Objective: Improve the competitiveness of the shea sector in Guinea and increase revenue in the sector.

General Indicators: Absolute income in the shea sector and annual percentage of the change in income of the female producers and local agro-processors on the sales of shea products (almonds and butter) in the Haute Guinea region and the country.

Definition: Determination of the total value of sales made by the female producers for a commercialization campaign in the project's target intervention region.

Measurement Units: Percentage change in income compared with the base year.

Measurements Taken: by gender (female and male shares); by type of products (almonds, raw butter, processed butter for end consumption).

Sources and Frequency: Among operators (female producers, wholesalers, agro-processors, market information systems, export statistics). Data summarized in an annual report.

A1) Intermediate Result 1: Increase the sustainable production of shea products by adapting the supply to the requirements of the market

Performance Indicators:

- Quantity of butter produced in the intervention zones of the project;
- Increase in the production capacity of the units (rural traditional - almonds and raw butter; and urban agro-processors - by-products);
- Number of groups and agro-processors using improved production technologies;
- Adoption of sustainable management plan for exploitation of the shea resource.

Example: “Quantity of butter produced in the intervention areas of the project”

Definition: Total quantity of butter produced through improved processes introduced in the target areas due to the intervention of the project.

Measurement Units: Quantities (in metric tons); Number of ... (in units)

Measurements Taken: by gender (female and male shares); by type of products (almonds, raw butter, processed butter for end consumption).

Sources and Frequency: Among operators (female producers, wholesalers, agro-processors, market information systems, export statistics). Data summarized in periodic project reports (quarterly and annual).

A2) Intermediate Result 2: Increase the Trade of Shea Products

Performance Indicators:

- Volume of butter sold by female producers and by small agro-processors;
- Volume of processed products launched on the market by agro-processors and exporters;
- Number of business relationships created between rural female producers, local agro-processors and importers (number of commercial contracts);
- Number of new shea butter-based products existing on the market;
- Number of export markets (sub-regional and international).

Example: “Volume of butter sold by female producers and by small agro-processors”

Definition: Quantities sold on local and foreign markets.

Measurement Units: Metric tons.

Measurements Taken: by gender (female and male shares); by quality category (raw butter, processed butter for end consumption) and by market segment served.

Sources and Frequency: Among operators (female producers, wholesalers, agro-processors, market information systems, export statistics). Data summarized in the annual report.

A3) Intermediate Result 3: Access to increased financing to support the processing and commercialization of shea products

Performance Indicators:

- Number of beneficiaries with access to credit to invest in shea processing equipment;
- Number of beneficiaries with access to credit to commercialize shea;
- Amount of financing granted;

Example: “**Number of beneficiaries with access to credit to commercialize shea**”

Definition: Number of agro-processors that obtain credit with financial institutions to support their commercialization funds requirements.

Measurement Units: In numbers.

Measurements Taken: by gender (female and male shares); by type and size of companies.

Sources and Frequency: Among operators (female producers, wholesalers, agro-processors, market information systems, export statistics). Data summarized in the annual report.

APPENDIX C

3.1. Table 5: List of people met

#	Last and First Names	Services/Positions	Addresses: Physical; Tel.; Email
1	BEAVOGUI Famoï	Scientific Coordinator IRAG, Centre Bordo	beavoguifamoi@yahoo.fr
2	BEAVOGUI Sekou	CEO, IRAG	60 54 31 34
3	BERETE Ansoumane	Division Manager, Integrated Framework Projects	60 29 32 96 / 30 43 10 48
4	BERETE Kee	SOGUIFRET	60 54 24 59
5	CAMARA Bassirou	Technical Officer, ACA	30 71 05 30
6	CAMARA Ibrahima	Prefectural Forestry Administration	Kankan/60 58 42 66
7	CISSE Imourana	Consultant, Douti gnoumou Group	Kaléla TRAORE District
8	CISSE Sangaré	Consultant, Douti gnoumou Group	Kaléla TRAORE District
9	CONDE Mamadi	Center for Export Formalities	Conakry/60 26 46 18
10	DIAKITE Ibrahima	Secretary, Mandiana Faming Union	Mandiana ACA AVP
11	DIAKITE Ibrahima	ACA official in the Mandiana CIAC	Mandiana CU
12	DIALLO Mohamed Laye	Prefectural Forestry Administration	Kankan/60 58 42 66
13	DOUMBOUYA Sakho	Secretary, Union	Dabola
14	GOUMOU Yèkè	CEO, Industrial Development	Ministry of Trade, Industry and Small Business/60 26 73 85
15	Joshua Romalis	Assistant Director for Small Business	Peace Corps/63 40 79 95
16	KABA Abdoulaye	Shea Stock Controller	Kaboukaria
17	KABA Oumar	Platform Maintenance Specialist	Dibida-Kankan Market
18	KALLE Moussa	Benkadi Group	Kaboukaria
19	KANE Mamadou Abdoulaye	Director, SPCIA	60 21 37 76
20	KEITA Béréte	Training Section Director, CPTI	60 57 43 85
21	KEITA Mamy	Executive Director, ACA	30 46 37 84
22	KEITA Mory	Agricultural Equipment Manufacturer	Mory Oulin District/60 30 79 33
23	KEITA Sanoussi	Technology Trainer	Mandiana
24	KOEVOGUI Dianka	CEO, OPIP	Conakry/60 25 18 76
25	KONATE Drissa	Hèremakono Group	Sébékoro
26	KONATE Mamady	ACA Anchorperson	Haute Guinea/60 58 06 46
27	Ms. Awa YOULA	President of Douti gnoumou Group	Kaléla TRAORE District
28	Ms. BALDE Fatoumata Binta	Faba Aiba Company and AGOA Coordinator	Conakry/60 55 39 16
29	Ms. BERETE Sona	Treasurer, Benséma Group	Norassoba Siguiri Rural Community Development
30	Ms. CONDE Ballou	Member, Kankanais Group	Kankan/64 41 17 03
31	Ms. CONDE Hadja M'balou	President of the Benkaki Group	Kaboukaria

#	Last and First Names	Services/Positions	Addresses: Physical; Tel.; Email
32	Ms. DIAKITE Olendé	Secretary of the Benkadi Morodou Group	Morodou
33	Ms. DIAKITE Sita	President of the Benkadi Group	Dalako District (Kankan)
34	Ms. DIALLO Fanta	President of Kankanlaise Group	Kankan/60 34 62 00
35	Ms. DOUMBOUYA Doussou	Member, Kaïraba	Kaboukaria
36	Ms. Hadja Mariama Traoré	Sabougnouma Vice President	Koumarella District
37	Ms. KABA Hadja Fanta	Kaïraba Group	Kaboukaria
38	Ms. KEITA Kandja	Bolomassi of Kiniéran	Kiniéran Sub-prefecture
39	Ms. KEITA Oumou	President of the Bolomassi Group	Kiniéran Sub-prefecture
40	Ms. THEA Angelle	Trainer (Processing Technology)	Conakry/angelletea@yahoo.fr
41	Ms. TRAORE Hadja Nènè	President of the Sabougnouma Group	Koumarella District
42	Ms. YOULA Awa	President of the Douti gnoumou Group	Kaléla Traoré Sector
43	Mory DIAKITE	Credit Manager (MGE)	Kankan
44	SACKO Aly	Assistant Director, SOGUIFRET	Conakry/64 37 89 53
45	SANGARE Abdoulaye	Shea Butter Wholesaler	DIBIDA Market Kankan
46	SPONDON Phukan	Exporter	Conakry/60 25 11 10
47	SYLLA Abdoulaye (Cdt)	Assistant Director, CPTI	Conakry/60 33 58 68
48	SYLLA Mohamed	Technology Consultant	Conakry/60 25 11 10
49	TINKIANO Alphan	ATC Group Coordinator, Dabola	60 45 95 16/Tinkiano 63 @yahoo.fr
50	TOURE Sekou Abdoulaye	CEO, CPTI	60 21 40 69/64 23 34 65
51	TRAORE Balou Madi	Sector Manager	Kaléla Traoré Sector
52	TRAORE Framoudou	Consultant, Siguiri Planters Union	60 31 04 84/babout1974@yahoo.fr
53	YINGLING Ryan	Peace Corps Volonter [sic.]	ARCA Kankan Branch

3.2. Table 6: Mission Steps (September 26 – October 17, 2006 Agenda)

Date	Itineraries (Areas Visited)
September 26, 2006 (Beginning of the mission)	Bamako/Kankan Travel (Rental Vehicle)
September 27 (Planning)	Kankan (<i>ARCA Project vehicle, for the remainder of the mission</i>)
September 27-29, 2006	Village and market visits – Kankan area
September 30 – October 1, 2006	Village and market visits –Mandiana area
October 2, 2006	Continue village and market visits –Kankan area
October 3, 2006	Village and market visits –Siguiri area
October 4-6, 2006	Village and market visits –Dabola area
October 7-16, 2006	Institutional contacts and market visits – Conakry
October 17, 2006 (End of mission)	Return/Conakry – Bamako Travel (Air)

APPENDIX D

Profile of the Agro-business Organizations Identified in the Shea Sector

One of the objectives of this roadmap is to create an opportunity to work in a network with the participation of all players. The space for dialog thereby created will enable them to share a common vision, seek and acquire the appropriate means to defend the interests of the sector. This assumes therefore a voluntary commitment and discipline to participate in the implementation of the process, making it possible to achieve noticeable results.

1. Production of the Resource

Through varied roles and missions, the following organizations support agro-business:

Comité de Lutte pour la Fin de la Faim

COLUFIFA is an NGO intervening in Haute Guinea in the subject of protection of natural resource and conservation of biodiversity. As an operator for the implementation of Action Plans to Conserve Biological Diversity in Guinea, it will participate in the creation of a shea cultivation promotion center in Dabola prefecture. It is planned that the knowledge of this promotion center, if conclusive, will be put into general use throughout Haute Guinea and also in other favorable areas of Guinea.

L'Institut de Recherche Agronomique de Guinée

(IRAG) is a scientific public organization with administrative, financial and management autonomy. IRAG's mandate is to implement national agronomic research policy: plant, animal and forest products and their agri-food processing; conservation and improvement of the natural resources involved in these products; agricultural exports and their socio-economic environment.

National Water and Forest Administration

This is a public department responsible for the implementation and monitoring of forestry activities, in particular the consideration of sustainable resource management issues.

UNITERRA

Its objective is to contribute to achieving sustainable food security, which is a concern of fundamental importance in Guinea. Uniterra intervenes in various areas: revitalization of organizations able to ensure the self-promotion in the various components of the rural sector. Its second priority is to support the production base through non-consumptive and participative management of the natural resources.

2. Processing Techniques and Technologies

The following organizations were identified previously by the assessment studies of the ARCA project:

Public and Para public Structures: which have accumulated diverse experience in improving the appropriate technologies for the extraction of shea butter:

Institut de Recherche Agronomique de Guinée

IRAG, through its Food Technology department, has the ability to participate in the design and performance testing on manufacturing processes.

Institut National de Normalisation et de Métrologie

The INNМ coordinates the implementation of government policy on standardization, quality control and measurement in all socio-economic sectors of the country.

Service National de Contrôle de la Qualité et des Normes

The mission of the SNCQN is to control the application of laws and regulations on quality and foodstuffs standards and food services. This ability is also exercised in monitoring the code of good conduct for loyalty in commercial transactions. It could participate in performing standard physico-chemical analyses and establishing a certification system for export products.

Centre Pilote de Technologie Industrielle

The CPTI is a scientific and technical organization created in 1991 to play a support role in the development of the private sector in the area of manufacturing production equipment and their maintenance in the Republic of Guinea. It must use private-sector support for better technological choices, better management of technological innovations and to facilitate their absorption by industry and traditional producers. Various engineer profiles are available to participate in the design, creation of shea butter production lines.

3. Commercialization Capacity

3.1. Para-public Organizations

Agence pour la Commercialisation Agricole

The ACA offers operators market information services and participates in the formation of agricultural organizations. In an attempt to take into account the locations and coordinate the intervention of the players and support organizations of the shea sector, the Agence pour la Commercialisation Agricole (A.C.A) organized a national cooperation workshop in Kankan on March 14, 2005 on “the issue of organization and professionalization of players in the shea sector in Guinea.” The 103 participants came from Labé (Djonfo), Dabola, Kouroussa, Siguiri, Mandiana, Kérouané, Kankan and Conakry prefectures. In the framework of its partnership with the regional project (MISTOWA), the ACA will reinforce its design process in the establishment of a market information system (SIM) for agricultural products on the sub-regional and international levels.

Le Centre International d’Echanges et de Promotion des Exportations

CIEPEX specializes in promoting Guinea’s foreign trade. Its tools are based on the organization of commercial events in the country and abroad. Since 1991, CIEPEX has applied itself to making known Guinea’s economic potential in the business world in the country and abroad.

The center also collects and disseminates all economic, commercial and legal information promoting the fluidity of exchanges and improving the volume of business of the companies and enterprises.

In the framework of its partnership with Uniterra, CIEPEX is dedicated to promoting and increasing the commercialization and exportation of agricultural products from Guinea. To do so, it plans to develop and set up a market to promote domestic products whose characteristics will concern the wholesale market with exhibition grounds permitting exchanges, facilitating business and contacts between Guinean and foreign partners.

Centre International du Commerce: Focal Point of the Integrated Framework

Participates in strengthening commercialization capacities. The approach of the CCI is perceived by all representatives as a very anticipated means of highlighting all obstacles encountered by the economic operators disadvantaging the development of Guinean foreign trade on sub-regional (WAEMU or ECOWAS as a whole) and international markets at the same time.

Office de Promotion des Investissements Privés

OPIP is a government-owned corporation (EPA) with legal capacity and financial autonomy. Its mission is to implement the policy of the Government of the Republic of Guinea on private sector promotion. All business formalities are managed through a “One-stop Office.” It is responsible for learning about investment projects and determining the tax advantages.

Center for Export Formalities

CAFEX is a public corporation serving the private sector created by decree with the objective of facilitating business formalities relative to export. It includes technical offices, representatives of the various administrations involved in the issuance of certificates that must accompany export products of agricultural, fishing, live-stock and arts-and-craft origin. In relation to commercial bilateral and multilateral agreements, the following documents can be obtained:

- Certificate of origin; Quality control certificate; Phytosanitary control certificate; Certificate of zootechnical check; Goods control certificate (EUR 1).

In addition to this certification authority, CAFEX fulfills the duties of market information, quality assurance, regulatory oversight and statistical observation of the movement of export product freight.

AGOA Network – Guinea: For the organization and export of butter to the United States

Guinea is henceforth among the 37 sub-Saharan African countries eligible for the AGOA. The network was established with the support of USAID in partnership with the Ministry of Trade, Industry and Small Business. The Guinean network of AGOA participates in the popularization of the opportunities offered by the American market to Guinean exporters. Over 6,400 products are affected by this partnership, which consists of granting to eligible countries preferential access for their products on the American market, in particular exemption of customs duties and without quotas. This law (African Growth and Opportunity Act), initially passed for expiration at the end of 2008, was extended until 2015.

3.2. Private Commercial Organizations

Some commercial companies already have experience or are interested in the export of almonds or shea butter.

Société de Production et de Commercialisation d’Intrants Agricoles

SPCIA, with its mixed corporation/national NGO status, works on the transfer of technology, strengthening the technical and organizational capacity of producers and sustainable management of the environment. It takes part in the commercialization of various agricultural products and is interested in the export of shea butter.

The FABIA – AIBA Import/Export COMPANY sells various agri-food products to the United States including shea. The company is in the process of preparing to launch a line of cosmetic products under its name.

REGENT Organizations specialize in the export of raw products with early experience in the process of this campaign for raw shea butter.

3.3. Local Packaging Manufacturers

Plastic packaging importers or manufacturers are identified on the local level. This is essentially for bulk packaging (bags, buckets, barrels, drums):

- TOPAZ Multi-Industrie SARL; SOFIPLAST both in Conakry.

4. Structuring of the Organizations

Guinea Chamber of Commerce Industry and Crafts

The principal roles of the GCCIC are among others:

- To ensure representation of the common interests of the economic operators of Guinea in the areas of trade, industry, crafts and services;
- To create dialog and cooperation among its nationals, promote exchanges and industrial and traditional production;
- To maintain and support close cooperation with the other national chambers of Guinea, in view of their obviously complementary roles;

Guinea Chamber of Agriculture

CAG is an offshoot of the Regional Chambers of Agriculture whose activities it coordinates.

Conseil National des Organisations Paysannes de Guinée

The CNOP – Guinea includes 4 regional federations (Paysans du Fouta Djallon, Planteurs de Café, Producteurs de Coton, Organisations Paysannes de Basse Guinée). It is a space for cooperation and exchange, which considers the participation of rural women in the proper function of local-level governance bodies, to make known the specific problems of women and defend them. It is a framework for exchanging information and experience for the players in the rural world.

Maison Régionale des Organisations Professionnelles Agricoles

MAROPA intervenes to strengthen the capacities of rural organizations. It provides various forms of consulting assistance to develop producer unions. It is currently actively participating in

the development of commercial contacts based on formal contracts with exporters or wholesalers.

National or International NGOs and Associations in the Shea Sector

Several NGOs are participating in the process of strengthening the capacities of rural organizations. Some have gained experience in managing production (training) and commercialization. The following organizations are identified for this type of agro-business activity in the shea sector:

- Organisation Catholique pour la Promotion Humaine (OCPH), Secours Rapide Rural (SRR), Association d'appui au développement des Initiatives Communautaires (ADIC), CECI – Guinea, AFRICARE – Guinea, Action Transformation Commercialisation (ATC), the Djigui NGO, etc.

Some organizations are specialized in recognizing the aspect of gender in their activities:

- Associated Women for Development and Export (FADEX), Women and Development (FED), Women's Society for Development, Guinean Network of United Social Economies (REGESS), etc.

5. Funding of the System

Maison Guinéenne de l'Entrepreneur

MGE is a microfinance organization, which develops and offers several financial products adapted to the rural sector. In its financing approach, preparing beneficiaries to better manage funds is the mechanism for securing the credit granted.

Other organizations in the decentralized financial system will be able to support the development of new financial products to meet the requirements in terms of shea: equipment credits, working capital or commercialization funds with guarantee formats based on “third-party holding” of the butter production on the union level, against a sum of money. The microfinance organizations targeted are: Crédit Rural and PRIDE.

6. Crossover Activities by Independent Consultants: Training and Caching [sic.]

Several independent consultants intervening for training and studies services exist on the market, some of which had direct activities involving shea:

- Bureau d'Etudes Aliou SOW, Consultant in training and design of agri-food production equipment;
- Morlaye SYLLA, Consultant, Tropical products processing technology;
- Néma Mathieu KOLIE, Entrepreneur, Designer and Manufacturer of ovens, dryers of agricultural products;
- DOUMBOUYA, Electromechanic, Designer of controlled-atmosphere, solar-powered preservation units with 220 V current;
- Mory KEITA, Manufacturer of product processing equipment: shea nut steaming, almond crusher and grinder, tumbling of the emulsion.

7. Coordination, Sponsorship and Mobilization of Technical and Financial Resources

All the international or bilateral organizations that share the realization of the Millennium Development Goals by promoting agro-business activities support the sector directly or indirectly: UNDP, UNIDO, UNIFEM, World Bank, Peace Corps, CCI, UNCTAD, AFRICARE, AFD, USAID, CIDA, EU Commission, etc..

APPENDIX E

WAEMU ¹ STANDARD FOR UNREFINED SHEA BUTTER (PRELIMINARY DRAFT): Excerpt

PURPOSE

The purpose of this standard is to establish the characteristics, which unrefined shea butter for human consumption must meet.

DEFINITION OF THE PRODUCT

Unrefined shea butter is the fat obtained from the *Vitellaria paradoxa* nut (see Gaetn.) through manual or mechanical processes and heat processing that does not cause alteration of the butter. Unrefined shea butter is butter appropriate for human consumption in its natural state.

ESSENTIAL FACTORS OF THE COMPOSITION AND QUALITY²

Raw Materials

Vitellaria paradoxa (see Gaetn) nuts must comply with the provisions of the pertinent Codex standards, in particular the Codex standards for contaminants and toxins in foodstuffs (CODEX STAN 193 – 1995; Rev. 1 – 1997), if necessary, the pertinent sections of the usage codes concerning measures taken at the source to reduce the contamination of foodstuffs by chemical substances (CAC/RCP 49 – 2001). The raw materials must be stored, processed and handled under conditions that preserve their chemical and microbiological characteristics.

Organoleptic Characteristics

The color, odor, taste and texture must be characteristics of the unrefined natural shea butter.

Physico-chemical Characteristics

Quality Factors

Characteristics	Unrefined Shea Butter					
	Category 1a		Category 2b		Category 3c	
	Min.	Max.	Min.	Max.	Min.	Max.
Moisture (percent)	-	0.05	0.06	0.2	0.3	2
Free fatty acids (percent)	-	1	1.1	3	3.1	8
Peroxide value (meq/kg)	-	10	11	15	15.1	50
Impurities (percent)	-	0.09	0.1	0.2	0.3	2

Distinctive Criteria

a) Physico-chemical indices and factors

- Density (40°C):	0.89 – 0.93
- Saponification value (mg KOH/g)	160 - 195
- Iodine value (g I ₂ /100g)	30– 75
- Unsaponifiable matter (percent)	1 – 19
- Refractive index	
- Melting point (°C)	35 – 40

¹ West African Economic and Monetary Union (WAEMU) 380, Rue Agostino Neto 01 BP 543 OUAGADOUGOU 01 BurkinaFaso Tel.: (226) 50 31 88 73 through 76 Fax: (226) 50 31 88 72 Email: commission@uemoa.int Internet: www.uemoa.int et ww.izf.net

² The limits of the essential composition and quality factors of unrefined shea butter show large differences between the minimum and maximum values because they take into account the characteristics of unrefined butter from a large number of producer countries.

^a Unrefined shea butter in the first category intended for the cosmetics and/or pharmaceutical industries and direct consumption.

^b Unrefined shea butter in the second category intended for food industries (candy, chocolate, cooking and margarine, etc.)

^c Unrefined shea butter intended for soap factories and direct consumption after refining.

b) GLC intervals of the fatty acid composition (percent of the total fats)³

- Lauric acid (C 12:0)	< 1
- Myristic acid (C 14:0)	< 0.7
- Palmitic acid (C 16:0)	2 – 10
- Palmitoleic acid (C 16:1)	< 0.3
- Stearic acid (C 18:0)	25 – 50
- Oleic acid (C 18:1)	36–62
- Linoleic acid (C 18:2)	1 –11
- Linolenic acid (C 18:3)	< 1
- Arachidic acid (C 20:0)	< 3.5

2 Samples whose fatty acid compositions do not correspond to the intervals indicated do not comply with the standard. As needed, other non-mandatory criteria can be applied to confirm that a sample complies with the provisions of the standard.

APPENDIX F

1. Proposed Steps for Implementation of the Quality Approach

Responsibilities and specific roles must be assigned to each party involved. The various roles must be complementary, and overall, cover the entire field of issues to be addressed concerning the concept of quality. It would then be good to establish periodic consultations between the different players. Each of the players must join and contribute voluntarily to the success of the recommended approach. The adoption of good manufacturing and hygiene practices will be a determining step to ensure that quality is built throughout the shea chain.

Its management can be ensured in an initial phase by establishing an ad-hoc committee including:

- Partners in the sector (female producers, associations, cooperatives, wholesalers, exporters, importers);
- Service providers (laboratories, carriers, shipping agents);
- Technical assistance organizations (projects and NGOs);
- Government services (ministries concerned);

The objectives of such committee will be to:

- Give shea products a reputation;
- Make all parties involved realize the importance of preventing noncompliance;
- Establish competition systems (recognition of the quality reputation by area) to lead production groups to compete in terms of quality;
- Ensure proper implementation of the quality approach.

As operational mandates, the committee would be in charge of drafting a code of good practices in the sector, drafting qualification procedures and the implementation of a support and training plan for the players (based on a voluntary commitment).

At this time, insufficient competitiveness of the products is noted on the export markets due principally to insufficient quality and inappropriate packaging of the latter, given that the standardization, quality control and packaging tasks are not carried out in an effective and regular manner. The priority tasks will be:

- Product characterization technical definitions (almonds and butter);
- Physico-chemical quality standards;
- Health standards;
- Sampling and quality analysis procedures;
- Export approval procedures by independent bodies;
- Collection and dissemination of commercial and technical information on compliance criteria;
- Analysis of frauds related to quality and determination of the sanctions;
- Promote the quality approach by adopting specifications enabling self-regulation within the units and the performance of inspections on the compliance of the procedures and products;
- Have a good practices code adopted.

In summary, to overcome this situation, which is unfavorable to the commercial development of the shea sector, each of the players must join and contribute voluntarily to the success of the recommended approach:

- Establish and adopt good practices guides on the production-site level;
- Reinforce the means of inspection on the market level through heavy involvement of the interprofessional organizations and officials competent in the subject;
- Large-scale training of the players;
- Reinforce the cooperative connections (local, national, sub-regional and international);
- Exchange information between the existing organizations in the various links of the sector;
- Intensive and regular communication program to explain in a clear and simple manner to users the scope of the quality approach (taking into account all aspects: technological, legislative, regulatory, social, economic, etc.);
- Activate the Technical Standards Committee.

2. Presentation of Quality Criteria & Market Requirements (according to usage standards)

Shea Butter and Chocolate Factories

Chocolate factories are attracted by the stearic portion.

Classification among manufacturers:

- Stearic (S)
- Oleic (O)
- Palmitic (P)

The triglyceride combination sought by the chocolate industry is “SOS”;

Commercially, a price could be set based on the SOS composition.

The SOS contents depend on the origins (great variability exists between the producer regions), hence the interest in considering an origin system for shea (production land). The boiling points characterize the composition (fatty acid profile):

SOS: 43°C; POS: 38°C; POP: 37°C; SOO: 23°C; POO: 16°C

Principal characteristics of the portions: boiling point

- Oleic portion > stearic (liquid at room temperature > 25°C: oil)
- Stearic portion > oleic (solid at room temperature < 40°C: butter)

Portions sought by the cosmetics industry:

- Antioxidants; Terpenes and sterols; UV absorbant; water soluble fatty acids; Vitamin E; Colpr (presence of carotenoids)

Other parameters important commercially for assessing quality and technological capabilities are the contents in the product for:

- Fats (high); free acid content (almost zero); peroxides (almost zero); insaponifiable elements (high); moisture (almost zero); impurities (almost zero); color (natural close to white); etc.

APPENDIX G

Proposed Steps for Coordination and Grouped Purchasing of Packaging

The approach will be the following:

For the choice of buckets and barrels:

- Coordination of the dimensions and capacities;
- Choice of colors;
- Estimate of quantitative requirements;
- Commercial negotiations with the plastics industry;
- Grouped orders;
- Sales divided based on the financial capacity of the groups.

For the labels:

- Creation of a collective mark to be promoted as a sign of quality;
- Design of logo and the labels;
- Assessment of the quantitative requirements;
- Commercial negotiations with the printers.

The labels must be improved in terms of design and contain all the minimum information required. This is not the case currently with the majority of female producers. The information on the labels must contain, in the case of packaged shea butter:

- common name of the product;
- net weight;
- name and address of the producer;
- reference of the lot and production date;
- use-by date;
- method of use and usage instructions (with culinary recipes inserted, if possible);
- storage or preservation instructions;
- nutritional information when the label has claims about nutritional qualities specific to diet and health. This information may be required in some export countries;
- bilingual labels (in the case of exports, as necessary).

APPENDIX H

Good Practices Foundation: Harvest –Processing and Packaging-Commercialization

The objective is to recall some guidelines relative to the principal steps for obtaining products that meet manufacturers' qualitative requirements. It is a proposal that can serve as a basis for establishing specifications to be met to ensure the regularity of the quality of the products (almonds and shea butter), which will be commercialized based on a standard of good production and handling practices.

1. Organization of the Supply Operations

The lack of professionalism among the operators is a major reason for the quality problems. The measures taken must help improve the performance and effectiveness of the supply networks. The commercialization practices must evolve toward more formal types of relationships between the female producers, collectors and exporters.

The operators should attempt direct negotiations with the female producers for the supply of quantities known in advance and according to quality specifications. They would thereby support the production of the women by guaranteeing purchase at a price set in advance according to conditions well understood by the parties. It is therefore necessary to test this opportunity to work in a long-term partnership in the areas managed based on the following conditions:

- Eventually establishing agreements;
- Setting pre-established prices based on quality criteria;
- Planning purchases on a shorter schedule;
- Providing technical advising to the female producers to obtain good quality almonds;

Benefits for exporters in the sector:

- Stabilization of prices during the campaign;
- Better targeting of supply sources and securing of loyalty among the most reliable suppliers;
- Planning of quantities and realization of economies of scale by increasing quantities picked by targeted area;
- Better control of supply sources;
- Reduction of transaction costs;
- Improved quality of the deliveries and image of the origin among buyers;
- Benefits for improving the quality/price ratio;
- Benefits created for the sector;
- Opportunities for eventually establishing a tracking process;

The good practices specified below are from the training manuals used by NGOs and aid projects for the sector. These training manuals provide a set of practical advice on improved methods for shea processing.

2. Some parameters (for usage) used in the markets

The principal quality parameters considered on the international market and tolerance levels follow:

For almonds:

- | | |
|----------------------------|--|
| - Free fatty acids content | (< 5 percent) |
| - Fat content | (> 40 percent) |
| - Moisture | (< 8 percent) |
| - Impurities | (almost zero) |
| - Traces of hydrocarbons | (analytical zero/no tolerance) |
| - Processing methods | (nuts boiled and sun-dried no more than 48 hours after picking the fruit) |
| - Packaging method | (sorting to eliminate damaged almonds/packaging in jute bags/storage with good ventilation of the almonds) |
| - Age | (Commercialization of almonds from the current year's harvest). |

For butter

A product for cosmetic use is necessary whose composition must be free of all agents foreign to the product. The butter is obtained through a mechanical pressure extraction process (without the addition of chemical solvents).

We are noting here some basic parameters for this type of traditional extraction butter sought by the cosmetics industry for use “as is” or in formulations:

Physical Characteristics

- | | |
|-----------------------------------|---------------------|
| - Water and volatile constituents | < 0.05 percent |
| - Color | Yellow (ivory) |
| - Density | 0.90 to 40° Celsius |
| - Insoluble impurities | < 0.2 percent |
| - Melting point | 29 to 34° Celsius |

Chemical Characteristics

- | | |
|-----------------------------------|-------------|
| - Acidity | < 1 percent |
| - Approx. insaponifiable elements | 7 percent |
| - Peroxide number | < 10 meq |
| - Iodine value | 64 to 72 |
| - Saponification value | 160-200 |

These commercial specifications can only be satisfied through the adoption of a quality management approach and observation of good practices codes in each stage of the processing operations and commercialization.

It must be clear to all parties involved that during transactions and transfers of products from one party to another, some verifications are necessary to confirm the compliance of the products.

To obtain and maintain quality, it is important that:

- processing in the production phase be carried out under conditions that reduce all risks of alteration of the products;
- handling during the sale must maintain the initial level of quality.

3. Steps to Obtain Results

Awareness, Information and Training

- They must be well informed and trained on improved techniques for obtaining almonds and raw butter;
- They must be appropriately equipped to use the recommended processing methods;
- They must be familiar with simple techniques to self regulate quality in the different phases of processing (obtaining almonds and butter);

Schedule for Obtaining Improved Almonds:

Harvest

- The fruit picked must be mature and rotten fruit must be removed;
- Before depulping, the fruit must be protected in appropriate storage to prevent contamination by insects, germination and too much fermentation, acidification or any other excessive alternation;
- The fruit must not be left in direct contact with soil;
- The fruit must be protected from insects or other domesticated animals;

Preparation of the Nuts

- The depulping must be carried as soon as possible, within a maximum of 48 hours;
- Scalding of the nuts must immediately follow. The nuts are soaked in boiling water (or exposed to steam) for 1-2 hours so that the treatment is uniform for the entire lot;
- The water used for the cooking must be clean and replaced if necessary;
- The cooking containers must be made of inert materials and cleaned after each preparation;
- The nuts will be spun well before drying;

Drying of the Nuts

- For natural sun drying, do not spread the nuts directly on the bare ground. The nuts must be spread out in thin layers on a concrete slab, matt or tarpaulin;

- For better and increased speed in drying, wicker racks placed at sufficient heights must be used, permitting good circulation of warm air throughout all the nuts;
- The piles of nuts in the process of drying must be turned several times per day;
- Any increase in moisture must be prevented by protecting nuts in the drying stage from rain and during periods of high humidity;
- Drying must uniform and fast to prevent any risk of developing mold, insects or other rot due to excess moisture;

Storage of the Nuts

- It must ensure that the nuts are dried until optimal reduction of moisture;
- Verification must take place before placing nuts in stock and during storage;
- The nuts must be stored in dry and well-ventilated locations, in bulk or in appropriate containers;
- Female producers must be familiar with the benefits and disadvantages of traditional storage means (lofts, jars, etc.).

Shelling of the Nuts

- The shelling must be performed with care to avoid breaking the almonds;
- The shell and almonds will be carefully separated. All foreign bodies or defective almonds must be removed from the lot before its packaging in jute bags (avoid woven polyethylene bags, which do not permit optimal ventilation);

Schedules for Obtaining Improved Butter

Regardless of the extraction method used, the equipment must be appropriate and clean before beginning the unit operations and throughout the processing activity: containers, workplace, and personal hygiene of the operator.

The quality of the raw material (almonds) must be impeccable: they must be well-dried and sorted;

Traditional Extraction Steps

- Crushing of the almonds: manual or with mechanical crusher
- Roasting: manual
- Grinding: by traditional mills or mechanical mill
- Extraction of the butter through churning and successive washings
- Processing of the butter: cooking of the emulsion, drying; skimming, settling; filtration; cooling and homogenization

Precautions to be taken During Extraction

- The utensils used must be appropriate (inert) and well-cleaned to prevent metallic traces and tainting of the butter. Metallic traces speed up the oxidation of the butter.
- The almonds must not burn during roasting. Otherwise, the butter will be black.
- If the extraction is carried out through churning, be sure to wash the emulsion until the wash water is clear. Otherwise, the butter will contain many impurities, which will reduce the yield and give the butter a poor visual appearance.
- The water must be completely evaporated. The presence of residual water in the butter causes hydrolysis of the fatty acids and activation of the oxidation reactions of the butter;
- The increase in temperature must be controlled in order to not destroy certain active principles (vitamins).
- The settling must be following by filtration. Poor settling and filtration increase the level of solid residues of the butter and a nonconforming texture.

Good butter is recognized overall by:

- Its characteristic shea smell;
- Its pleasant taste (does not cling to the tongue, with no bitterness, no astringency);
- Its smooth and firm texture (to the touch);
- Its white-cream or yellow-ivory color.

4. Guidelines for the Commercialization Steps

Training of Salespeople

- Agents responsible for the collection must be trained in quality control techniques;

- They must be familiar with the sorting, classification, packaging and storage methods;
- They must be able to recognize all signs of deterioration of quality (know how to distinguish, through sensory perception, good and bad products);

Control of the Products

- Before the packaging, in packages for sale, the products must be sorted and classified by quality categories and all products with visible defects must be rejected;
- The agents must ensure that the products are obtained from the recommended processing methods;
- The products must originate from the current year's harvest;
- Checks must be made before placing in shipment packaging or before admission for prolonged storage;

Packaging and Storage

- The products must be stored in well-ventilated warehouses;
- The humidity must not be elevated in the warehouse;
- Packages must not be in direct contact with the floor of the warehouse;
- The products must be stacked on palettes. The space between the palettes must be sufficient to promote good ventilation of the lots;
- Monitoring of the storage conditions and sampling must be frequent to ensure that there is no excessive moisture, development of mold or insects or excessive concentration of heat;
- The storage locations must be cleaned frequently;
- Chemical products to decontaminate the storage areas may be used except by authorized recommendation;
- The storage space must be optimized to permit good circulation of people and easy access for routine inspections of the lots and periodic cleaning;

For almonds

- The almonds sorted as clean and suitable must be packaged in clean jute bags. The bags must be sewn with care to prevent almonds spilling during the handling and storage phases. The bags must be weighed at an appropriate weight. Overfilling the bags must be avoided;

For the butter

- Butter poured into tied plastic bags, stored in 25 kg net rigid and airtight plastic buckets.
- Storage in cool, dry locations. Temperatures must not be elevated (idea is 20 to 24 ° Celsius maximum to prevent successive melting and solidifications).

Shipment and Transport of the Products

- Moisture increases must be avoided during shipment;
- The transport conditions must prevent all risks of alteration;
- Before loading the trucks, spot checks must be performed on the quantity to be shipped;
- The documents maintained must make it possible to identify: production areas, collection locations, parameters inspected, the gross quantity loaded, loading date, party responsible for shipping operations.

5. Industrial Application Areas

The principal known applications in the industries using shea butter (high added value) are specified below:

- Cocoa butter substitutes for the chocolate industry (higher in stearin)
- Binders for various food industries
- Coatings for the ice cream industry
- Special fats for the candy industry
- Pastry/Bread Making *
- Margarine Manufacturing*
- Dairy*
- Cooking oil for the restaurant industry*
- Special fatty acids for the cosmetics industry (higher in insaponifiable elements and olein)
- Specialties for dietary uses.
- * = Potential growth

Diagram of Shea Almond-Based Industrial Processing (Source: Aarhus/AFE)

