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YEAR I WORK PLAN

JANUARY 2010 – AUGUST 2011

INTEGRATED INITIATIVES FOR ECONOMIC GROWTH IN MALI (IICEM)

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ACRONYMS

AgBC	Agricultural Behavior Change
AGOA	African Growth and Opportunity Act
AID-SA	Agro-Industrie Développement - SA
AOM	Citrus Fruit and Edible Oils of Mali
AMEDD	Association Malienne d'Eveil au Développement Durable
AMASSA	Association Malienne pour la Sécurité et la Souveraineté Alimentaire (an affiliate of AfriqueVerte)
ANSSA	Agence National de la Sécurité Sanitaire des Aliments
API-Mali	Agence pour la Promotion des Investissements au Mali
ATP	Agribusiness and Trade Promotion project
AVRCD	Asian Vegetable Research Development Center
BICIM	Banque Internationale pour le Commerce et l'Industrie au Mali (Malian International Bank of Commerce and Industry)
BIM	Banque Internationale du Mali
BMS	Banque Malienne de Solidarité
BNDA	Banque Nationale de Développement Agricole (National Bank for Agricultural Development)
BOA	Bank of Africa Mali
CAE	Centre Agro-Entreprise, a USAID Project
CAFON	Coopérative Artisanale des Forgerons de l'Office du Niger
CAPAM	Mandela Agro-Pastoral Cooperative
CMDT	Malian Company for Textile Development
COMAFRUIT	Coopérative Malienne de Fruits
CPS/MA	Cellule de Planification et de Statistique/ Ministry of Agriculture
CRRA	Regional Center for Agronomic Research
CRS	Catholic Relief Services
CRSP	Collaborative Research Support Program
DCA	Development Credit Authority
DFID	Department for International Development
DHV	Développement de la Haute Vallée, a USAID Project
DMP	Development and Management Plan
DNA	National Agricultural Directorate
DNCN	National Nature Conservancy Directorate
DNEF	National Directorate for Waters and Forests
DNPIA	National Directorate of Production and Animal Industries
DRA	Regional Agricultural Directorate
DRCN	Regional Directorate for Nature Conservancy
DRGR	Regional Administration for Rural Engineering (Direction Régional de Génie Rural)
E-ATP	Extended African Trade Promotion project
ECOWAS	Economic Community of West African States
FAO	U.N. Food and Agriculture Organization

FIAS	Foreign Investor Advisory Service
GCC	Global climate change
GFSR	Global Food Security Response
GIE	Groupement d'Intérêt Economique
GIMS	General Information and Management System
GIS	Geographic information system
GMP	Motorized water (diesel powered) pump
GRN	Natural resources management
GSTA/PD	Global Sustainable Tourism Alliance/Pays Dogon
GTZ	German International Development Agency (Deutsche Gesellschaft fuer Technische Zusammenarbeit)
HFP	Host-free period
HIMO	Labor intensive practices
IER	Institute of Rural Economics
IFDC	International Center for Soil Fertility and Agricultural Development
IGF	Innovative Grants Fund
IICEM	Integrated Initiatives for Economic Growth in Mali
IPM	Integrated pest management
IPR/IFRA	Rural Polytechnic Institute for Training and Applied Research
ISFM/ICM	Integrated Soil Fertility Management/ Integrated Crop Management
ITC	International Trade Center
IUCN	International Union for Conservation of Nature
IVP	Irrigated village perimeter
JAAL	Journées Agro-Alimentaires (Agrofood Fair)
LOA	Law on Orientation of Agriculture
MARKETS	Increasing Competitiveness and Food Security in Nigeria project
MDS	Moulins de Sahel
MÉIC	Ministry of the Economy, Industry and Trade
MIS	Management information system
NRM	Natural resources management
ODRS	Office for Rural Development of Sélingué
OHADA	Organization for Harmonization of Business Law in Africa
OHVN	Upper Niger Valley Authority
OMA	Agricultural Market Observatory
ON	Office du Niger
ONG	Non-Governmental Organization
OP	Farmer Organizations (the French acronym for "Organisation Paysan")
OPIB	Irrigated Perimeter Organization of Baguineda
ORTM	Office de Radiodiffusion Télévision du Mali
PAFA	Program for Support to Agricultural Value Chains
PCDA	Project for Competitiveness and Agricultural Diversification in Mali
PIVA	Partner Institutional Viability Assessment
PMP	Performance Monitoring Plan
PRODEPAM	Agricultural Productivity Initiative in Mali
PROMISAM	Project to Mobilize Food Security Initiatives in Mali

PrOpCom	Promoting Pro-Poor Opportunities in Commodity and Service Markets program
REDD	Reducing Emissions from Deforestation and Degradation
SECO	Semaines Commerciales (National Trade Fair)
SAF	Strategic Activities Fund
SCOFLES	Sikasso Cooperative Company for Fruit and Vegetable Marketing
SIAGRI	Salon International de l'Agriculture
SICA	Agricultural Common Interest Company
SRI	System of Rice Intensification
SUDAGRI	Sud Agro Industrie Company
UCPMY	Union of Mango Producer Cooperatives of Yanfolila
ULTPE	Union of Processors and Producers of Shallots
URCEP	Regional Union of Potato Export and Trade
USAID	United States Agency for International Development
USB	First Generation Seed Unit
ULTPE	Dogon Plateau Union of Shallot Producers and Processors
USB	First Generation Seed Unit (Branch of IER)
VAT	Value Added Tax
WAEMU	West African Economic and Monetary Union (OHADA in French)
WARDA	Africa Rice Center (formerly West African Rice Development Agency)
WASA	West African Seed Alliance
WATH	West African Trade Hub

INTRODUCTION

Integrated Initiatives for Economic Growth in Mali (IICEM) is USAID/Mali's flagship economic growth project. The project spurs economic expansion and strengthens food security by increasing productivity in basic cereals and horticultural crops, using a value chain approach. IICEM is implemented by Abt Associates Inc. as prime contractor, in partnership with ACDI/VOCA; Sheladia Associates, Inc.; CARANA Corporation; and a number of Malian public and private entities.

This work plan describes the activities anticipated during Year I of the follow-on project, and through August 2011. As directed by USAID, the work plan incorporates changes that will better align project periods with USAID's fiscal year and Mali's agricultural calendar. The work plan aims to replicate and scale up the successful approaches used under phase I of the IICEM project. The work plan lays the groundwork for the next three years of implementation. With this new plan, IICEM focuses on tailoring production to meet demand, with strategies that are adapted to various products and responsive to the various needs of the market.

The objectives of USAID's 2010 Global Food Security Response are "to increase economic growth and develop basic food supply." The four pillars of this strategy are to increase agricultural productivity, reduce obstacles to commercial transport, promote agriculture based on the needs of markets, and increase participation by the very poor in economic growth. IICEM fits well within this framework. With a work plan based on the value chain approach, the project supports all actors in increasing their productivity and responding to market needs, thus increasing incomes.

OBJECTIVES

IICEM's interventions are organized around five core pursuits: 1) enhancing access to markets and trade while improving commercialization of targeted commodities; 2) expanding/rehabilitating irrigated agriculture and diversifying and intensifying agricultural production; 3) enhancing financial services; 4) improving the enabling environment for agriculture, trade, and private sector development; and 5) stimulating entrepreneurship with a strategic activities fund, an innovations grant facility, and small business development skill building.

Given that global climate change is leading to the deterioration of Mali's natural resource base, the project's plan to *sustainably* achieve agriculturally based economic growth also includes a specific objective to help beneficiaries adapt to climate change. The plan follows USAID best practices for climate change adaptation. For example, IICEM counters declining yields due to water deficits caused by reduced and more variable rainfall and higher rates of evapo-transpiration with increased dissemination of drought-resistant seed and improved water use efficiency. The project addresses damage and losses to livelihood assets by focusing on diversification of livelihoods, local added value, improved access to markets and finance, and improved local land stewardship to safeguard the natural resource base.

IICEM also pays keen attention to gender dynamics. During its first phase, IICEM offered women a chance to take part in income-generating activities along the links in the chain where women traditionally intervene, as well as along links that were new to them or traditionally reserved for men, taking into account existing constraints on access to capital, land, and knowledge. In Mali, the most profitable opportunities for women are found at the level of marketing and post-harvest technologies. During this new phase, as described in the section on "Promoting Gender-Equitable Opportunities" in Chapter IV, IICEM will strengthen its gender approach. The project is more carefully examining gender dynamics as part of ongoing value chain analyses

and is working to mitigate the potential imbalances in social dynamics that might be created by project activities that involve both men and women.

This report covers the first project year of the second phase of IICEM. It includes a presentation of planned activities by agricultural value chain, followed by fisheries activities and activities for improved management of natural resources, biodiversity, and climate-change adaptation. Cross-cutting activities, as well as management of the Strategic Activities Fund management and various items in IICEM's tool box, are described at the end of the report.

VALUE CHAINS

A. RICE

For the rice value chain, IICEM works in the regions of Sikasso, Mopti, Timbuktu, and Gao. In Sikasso, the project supports rice production mostly in lowland areas, while in the Mopti, Timbuktu, and Gao regions, IICEM support is directed at irrigated village perimeters (IVPs). The regions of Koulikoro, Kidal, and Kayes will be added, to take advantage of opportunities for these areas to better serve local and sub-regional market needs. Of note, in the south, women traditionally lead rice activities, while in the north, rice production is largely male-led, but with some mixed and women-led activity. For the most part, IICEM's interventions are organized around the traditional gender norms for rice production in particular areas.

The Value Chain Challenge

Rice is one of the success stories of Malian agriculture. Over the last 25 years, with the increase in production and relatively good prices for the past two years, the value of this crop has increased more rapidly than the value of other cereal crops. Rice has become an important food source and a major source of income for small producers in most regions of Mali, contributing significantly to poverty reduction. Contrary to some expectations, potential rice exports have been limited by an increase in consumption almost identical to the increase in rice volumes produced.

In the various production zones, both in the IVP areas and the low-lying areas, the rice value chain faces different constraints linked to production, processing and marketing. These include the following:

- Irrigation canals are defective, leading to high production costs.
- Poor quality seed is used.
- Yields are low and irrigation water management is lacking in the lowland areas (bas fond).
- Marketing is weak.
- The competitiveness of local rice is weak compared with imported rice, mostly due to dirt, stones and other foreign matter found in it.
- There is little specialization in products and a lack of knowledge about market needs.

Strategy

The project's strategy is based on a value chain approach. This overall approach stresses interaction among the various agricultural stakeholders involved in the rice value chain, from producer to consumer, to meet market demand. It enables improved marketing of targeted rice products in order to stimulate increases in production and productivity and to facilitate access to finance, while also creating added value from which all stakeholders, particularly smallholder farmers, will profit.

To expand its role in income generation for smallholder farmers and its contributions to poverty reduction, Mali's rice must be competitive. If Malian rice is to compete with imported rice, first in local urban markets and secondly in sub-regional urban markets, it is not enough to improve the quantity. The quality, particularly in terms of cleanliness, must also improve all along the chain.

Anecdotal information indicates that Malians, like populations in other West African countries, prefer the taste of local rice, but dislike the fact that local rice often contains significant quantities of dirt, stones, and other foreign matter. As incomes rise, urbanization increases, more children are in school, an increasing number of families find it advantageous to purchase clean rice rather than taking the time to clean it at home. (A similar trend is seen in Malian urban populations with sufficient income to buy rice, who substitute rice dishes for many millet and sorghum dishes.) Stakeholders in the rice value chain, including producers, processors, and traders, need to address this problem if they are to become more competitive in Malian

urban markets and export rice to urban populations in the sub-region. Because urban populations and urban incomes are growing rapidly, and because urban populations typically eat more rice than rural populations, this is an important segment of the market to capture. In coastal West African countries, the urban population has rapidly adopted the practice of eating imported rice and has demonstrated a willingness to pay a premium for clean, quality rice. Meeting the needs of the urban population is also an important task with regard to national food security. The experience of some West African countries suggests that this requires increasing the quality and ease of use of food products. The entire food and agriculture sector must adapt to meet the needs of this urban market or risk finding itself increasingly marginalized and seeing the quantity and cost of food imports mounting.

Improving the quality of rice requires improvements all along the value chain. It starts with better rice production practices and crop management. The practices of threshing or drying grain on the ground are significant sources of dirt and stones. Improper drying may give the grain a bad color and odor. Obtaining good quality milled rice (from any mill) requires using highly uniform paddy. But farmers' fields often contain some proportion of many varieties promoted by the extension services over the past decade, producing paddy of different sizes, having different characteristics such as hardness, and maturing at different times. Milling equipment and cleaning procedures also require great improvement, but producing milled rice that is competitive with imports will remain a challenge as long as the raw material available to the mills consists of non-uniform paddy.

To be competitive, Malian rice must also sell at a reasonable price. Increased on-farm productivity that results in an increased supply of rice will, in the long run, have the greatest impact on lowering prices for consumers (if the rice is of acceptable quality). Increased productivity will also be the primary source of benefits to smallholder rice producers, as it will increase food (rice) available to them and will increase incomes, improve livelihoods, and reduce poverty. Often, providing access to a stable, dependable market is the most important service that can be provided to small producers. Even if prices fall somewhat as total supply expands, producers will be better off if they have made significant increases in yields/productivity. This will, however, take some time. More immediately, reductions in transaction costs (for example, through bulking/group sales and reduced transport costs) and quality premiums can help collaborating rice producers increase margins and can improve incentives to increase investment in rice production at the farm level (buying improved seed, for example, and maintaining its purity).

Much of Mali is at risk of climate variability, particularly drought, but also flooding and deteriorating soil quality. Rice can be grown under rain-fed conditions in high rainfall areas (800 to 1,000 millimeters or more) or under irrigated conditions. Increasing the productivity of these high rainfall areas through the use of NERICA rice varieties is one way to use rice to adapt to climate change. To improve food security in the face of climate variability, however, perhaps the more obvious adaptation is to increase the area devoted to irrigated agriculture and maximize the production obtained in these high-potential areas. IICEM is increasing the production area under irrigation by rehabilitating and expanding irrigation infrastructure. It is also working with water user associations to make better use of the water available and to introduce improved seed and production practices to increase productivity in irrigated sites. To complement the rice value chain activities, IICEM is promoting horticultural production in the off-season to further contribute to family incomes and raise overall productivity and returns at the irrigation sites. A second source of income, which could be used to meet other needs and obligations, may also allow some farmers to retain a greater portion of the rice they produce for family consumption.

Implementation

Implementation of this strategy will focus on the following:

- Analyzing market segmentation and rice value chain operations.
- Extending cultivable areas through the development and rehabilitation of irrigation infrastructure and improvements in water management.
- Improving rice productivity in target zones with high potential.

- Building agricultural capacities for better management and governance of farmer organizations.
- Strengthening collaborative links between value chain stakeholders.
- Promoting added value, particularly by promoting processing of rice that is clean, hygienic, and free from small stones.
- Introducing mini rice mills in order to improve efficiency and upgrade the quality of the rice produced.
- Targeting the quality of post-harvest activities, particularly threshing and drying.
- Improving the uniformity of paddy rice produced and marketed.
- Promoting grouped sales and use of appropriate storehouses.
- Promoting the marketing of rice with varying characteristics and qualities, and improving packaging and labeling.
- Improving the Sikasso parboiled rice value chain.

The following table presents a brief analysis of the demand for rice in Mali and summarizes IICEM's planned interventions for the coming years.

TABLE I: RICE IN MALI

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • The market is essentially domestic (nationwide, 10 percent of rice consumed is imported) • Regional exports are limited to markets in immediate neighboring countries (Niamey, Bobo, Mauritania) and to niche markets such as the following: <ul style="list-style-type: none"> – higher quality <i>Gambiaka</i> (Ouagadougou and other urban markets) – parboiled rice (Guinea) – broken rice (Senegal) 	<ul style="list-style-type: none"> • In northern Mali and in many villages where there are existing IVP zones with food and rice shortfalls, producers sell only about 25 percent of their harvest at the local level, to pay irrigation costs and reimburse loans taken out for inputs. • Operating motor pumps is expensive. Maintaining and repairing them is difficult for small farmers. • Exorbitant production costs mean that rice from IVPs in northern Mali is not competitive in comparison with rice from the Office du Niger or from southern Mali. • Rice threshed on the ground and dried at the roadside is not clean. It contains many impurities, small stones, and other foreign matter. • Rice processed by simple small-scale hullers and dried on the ground is not clean or high quality. • Rice millers often provide their services for a flat fee (per sack, for example) and thus have little motivation to improve quality. 	<ul style="list-style-type: none"> • Evaluate end markets and monitor preferences of consumers, processors, and traders; monitor purchases and prices of various rice varieties. • Evaluate the various levels of demand for rice in Mali and in segmented markets, to meet these demands (alternative varieties of rice: long-grain whole rice, parboiled rice, broken rice, rice with a higher/lower percentage of broken rice.) • Link interventions to the AMAP Business Development Services study on the rice value chain and regional markets (financed by GFSR), as well as the E-ATP study of the rice value chain and corresponding action plan. • Identify the technical options for hulling/drying, cleaning, and sorting rice, taking into consideration cost, scale, and potential profitability. • Identify technical options for parboiled rice production to meet local and Guinean demand, on condition of potential profitability. • Continue evaluation of alternative techniques to intensify and reduce production costs by using irrigation. • Build the capacities of water users associations for good management and control and for maintenance of perimeters. • Promote intra-regional transport of various types of rice to selected urban markets in Mali and possibly in neighboring countries.

RICE ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

This group of activities aims to improve understanding of specific niches in the rice value chain, which will serve as a basis for future activities to improve marketing and market access by stakeholders. IICEM aims to market 3,300 tons of rice in 2009/10, compared to 2,685 tons in 2008/09 (an increase of nearly 23 percent) by supporting farmer organizations and working to segment demand, with the goal of better serving end markets.

Although analysis of the value chain is a continual process as markets evolve, IICEM and stakeholders all along the value chain need good knowledge of how end markets (including the consumer) are currently supplied. This work builds on the GFSR study of rice in Mali, where in-depth analysis is still needed. The project's efforts will be underpinned by a variety of specific market studies and analyses kicked off at the outset of the project year, as described below.

1.1 Survey national and sub-regional markets.

IICEM anticipates carrying out the following tasks:

- **Bamako:** Survey the various levels of traders and rice millers so that IICEM partners can better understand vendors' preferences, target clientele, attitudes regarding quality/price, availability of preferred types of rice, and investments they have to make to improve access to the preferred type of rice. Also survey rice consumers' preferences and willingness to pay.
- **Mopti–Ouagadougou:** Given significant flows of rice towards Burkina Faso, determine the niche markets for Malian rice so that it is competitive and profitable in these markets.
- **Gao–Niamey:** Given the proximity of Gao to Niamey, and of certain transactions between traders in Mopti and Niamey, there is a market and a sub-regional trade corridor leading to Niamey. Stakeholders must know its consistency and potential.
- **Kayes–Northeastern Senegal:** Help improve knowledge of the market and its needs for the other sub-regional markets. Women in Kayes are already trading with Senegal. It would be helpful to know specifically what could be done to respond to the needs of this market and to increase current trade.

Mopti and Northern Mali

1.2 Support the emergence of processor/producer hubs of private individuals investing in mini rice mills and producers making commitments to supply the mini rice mills.

Initially, two hubs have been identified: one with the cooperative union from the “Boucle du Niger” and the other with the Bara Issa and Kamaka zone in the Mopti region.

A large part of the rice milled in Mali is processed by traditional millers who not only have a weak processing capacity, but whose processed rice is of mediocre quality, with impurity levels ranging from 10 to 15 percent. The result is much lower prices for locally produced rice in the northern regions of Mali. To address this weakness, a group of IICEM project staff, producers, and commercial millers will visit the Senegal and Faleme river valleys and the Office du Niger (ON) zone to learn about experiences in milling and marketing rice through mini rice mills. The objective will be to make local rice more competitive by improving the milling rate and the quality of the rice milled and by offering more varieties on the markets (premium long-grain rice, intermediate grain rice, and broken rice).

To promote rice products with high added value, IICEM will carry out the following tasks:

- Research and compare available mills in the sub-region and in Mali, through the Cooperative of Metal Workers of the Office du Niger (CAFON) and local Chinese businesses, to facilitate the choice of a processing unit that is acceptable in terms of quality and cost.
- Identify credible traders/producers in the target areas who have the financial and technical capacity to take responsibility for (or experiment with) mini rice mill projects to work with producer organizations.
- Provide technical supervision and use the Strategic Activities Fund (SAF) or the Innovative Grants Fund (IGF) to support processing units, which would help to purchase a paddy sorter and system for cleaning, de-stoning, hulling, and polishing; a hulled rice grader; generators; and build or rehabilitate processing and storage buildings.

In order to ensure the success of the mini rice mill activities, IICEM will ensure the quality of paddy rice, foster win-win partnerships with the mini rice mills, and support them in minimizing costs and maximizing outputs. To accomplish this, IICEM will undertake the following tasks:

- Support the promotion of processed rice products to potential clients.
- Help stakeholders pursue local and sub-regional markets (market prospecting).
- Monitor and evaluate the functioning of each rice mill (looking at processed stocks, operating costs, stocks sold by type of processed product, seasonal balance sheet for marketing, etc.), including an economic and financial analysis of the viability of mini rice mills and their management by selected traders.
- Organize exchange visits to processing units by potential investors.
- Organize training-of-trainer sessions by an ON rice expert for quality rice processing.
- Draw up a complete marketing plan for the two mini rice mills, including a trademark and logo.
- Explore adapting and processing rice for the consumer in more portable (25 kilograms [kg], 50kg, and 100kg) packages.
- Mark sales points with signage.

Anticipated results: Adequate, improved equipment installed; an increased rate of processing of paddy as hulled rice with less broken grains, which will increase value for all actors. These improvements to local rice will lead to its sale at more profitable prices.

1.3 Pursue marketing training at the new mini rice mills.

Rice that is meticulously hulled and packaged with a logo (as discussed in 1.2) can constitute a brand that is appreciated by middle-income populations in urban and rural centers. To produce such a brand, IICEM and the traders who own the mini mills will work with partner organizations to do the following:

- Train management committee members at the new sites in business and financial management.
- Provide training in setting up sales plans.
- Offer training and support in establishing seasonal balance sheets and results accounting.

Anticipated results: Value of local rice increased; sales at more advantageous prices, thanks to partnerships developed with owners of the mini mills; eventual adoption of a commercial approach by the cooperatives (linked with the mini mills). Four hundred producers trained.

Sikasso

1.4 Facilitate promotion of parboiled rice by introducing modern technologies.

In order to create added value for rice from the lowland areas in the south, the following tasks are planned:

- Contract with the Agricultural Market Observatory (OMA) to track parboiled rice market data (price fluctuation, sales destinations, volumes sold, etc.).
- Collaborate with the National Agency for Food Security (ANSSA) to monitor compliance with quality and hygiene norms in parboiling rice.
- Train female processors in Zangaradougou on best practices for parboiling and drying rice.
- Inform women's groups on seasonal market demands and timing in order to establish a production and sales plan.
- Introduce modern technologies for parboiling and drying in the areas of Niéna, Loutana, M'pegnesso, Finkolo Ganadougou, and Nantoumana; train all women involved.
- Conduct joint training with the German Development Agency (GTZ) on improved parboiling technology and practices in Sikasso, testing a technology developed in Benin.
- Develop niche markets for parboiled rice.

Anticipated results: Increased productivity and, therefore, increased incomes for women; 300 women trained, including members of women's producer organizations and female rice traders, on best practice for parboiling, sorting, and drying rice; and 250 tons of parboiled rice marketed in Mali and the sub-region.

1.5 Train women processors in business management, to ensure cost management and effective marketing of parboiled rice.

The following tasks will be carried out by the project:

- Train women producers on determining production costs and establishing proposed sales prices in relationship to those costs.
- Train women producers on planning sales of parboiled rice.

Anticipated result: Two hundred women trained in business management. This better understanding of management will improve women's incomes.

Kayes

Kayes is a region added late in the first phase of the IICEM project. In Kayes, the project's work is implemented through a partnership that coordinates 30 women's associations. These women's groups specialize in purchasing and processing dry cereals; they are supported by the international NGO AfriqueVerte, which has local affiliates in Mali. The project's collaboration with AfriqueVerte will make it possible to work with the Coordinating Office of an established apex organization. After IICEM facilitates construction of a warehouse planned for 2010, this organization will handle significant volumes of rice and other cereals for local consumption and export to Senegal.

After obtaining land from the Governor of the Kayes region, IICEM will provide the women with a warehouse with a 600-ton capacity, to ensure the growth of the associations' businesses. Managing such a warehouse will require new skills in AfriqueVerte's Coordinating Office. With these new skills and a functioning warehouse, IICEM will strengthen and support the women's marketing activities across the region. The project will also work to remove certain current constraints. Meanwhile, increasing volumes to be marketed and processed will improve the flow of cereals from the south to the north of Mali, strengthening government efforts to target food security for Malian communes and opening new corridors for export to neighboring Senegal.

By transferring selected skills, the project will respond to the needs and interests expressed by the targeted women's cooperatives. Training will focus in particular on marketing, which is a traditional role for these women's cooperatives. IICEM estimates that, once they have warehouse access, these women's cooperatives will market 3,000 tons of dry cereals. Of these 3,000 tons, approximately 2,500 tons will be rice; the remaining 500 tons will be other cereals such as millet and sorghum. To reach this objective, the following activities will be carried out.

1.6 Promote group purchases of cereals in the north.

Women in Kayes currently purchase cereals from the south for processing (such as hulling rice) and re-sale. These purchases play an important role in cereal availability in the north. As an initiative to promote and expand cereal stocks and increase the women's income, the project will support group purchases in part through an existing system initiated by the coordinating office of AfriqueVerte's Malian affiliate, AMASSA. A warehouse is being built that will increase capacity to 600 tons, which will require several group purchases in order to achieve the targeted volumes to be marketed. The AfriqueVerte coordinating office will encourage members to participate in cereal exchanges in the south of Mali as well as in the Kayes region.

1.7 Facilitate the introduction of modern processing equipment.

To support the processing link of the value chain, the project will help the AfriqueVerte coordinating office learn how to use the various types of modern processing equipment proposed by the INTSORMIL program. To do this, IICEM will carry out the following tasks:

- Facilitate a more sophisticated level of cereal processing by organizing a visit to the Institute of Rural Economics (IER)/INTSORMIL processed products incubator, to be set up in mid 2010, where participants will be able to experiment with using various types of modern equipment with guided training.
- Stimulate increased interest in modern processing equipment, using IICEM's financial tools to cost-share new equipment and help women complete financing applications.

Anticipated result: Improved knowledge of modern processing equipment and of the various kinds of products that can be processed. By the second year, this could potentially lead to the purchase and use of modern equipment and to subsequent sales of high value added rice by member processors in local and sub-regional markets.

RICE ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

This group of activities aims to improve stakeholders' understanding of the rice value chain, as the basis for future activities to increase productivity. For the 2009/10 growing season, IICEM aims to facilitate production of 12,000 tons of paddy rice by men's, women's, and mixed producer organizations (compared to 8,141 tons last year—a 47 percent increase).

2.1 Rehabilitate and extend village perimeters and lowland rice cultivation areas using labor-intensive practices.

In general, the sites selected are those that benefitted several years ago from organized efforts to promote earthen principal and secondary irrigation canals by shaping soil at the site to channel water in and around the perimeter. IICEM is moving away from earthen canals and introducing cement canals to ensure better margins and therefore higher incomes for the participating communities. Three factors pushed IICEM to move to cement canals: i) difficulties with maintenance and annual upkeep of earthen canals (sometimes the entire principal canal had to be rebuilt each year, wasting the time and money of both beneficiaries and aid projects); ii) the sandy composition of the soil in IICEM's work zones, which does not permit the same level of results at the project's work sites as those of at the ON engineering work sites, where more clay

composition exists (For example, members of our partner farmer organization in Korientzé, told us that with their old earthen canals, it took 4 ½ hours for water to reach the far end of the perimeter, due to the permeability of the soil); and iii) significant costs related to operating pumps, given numerous system leaks and increased percolation of sandy soils in IICEM work zones. Started last year at 20 sites, the project's rehabilitation and extension work will be carried out through the following tasks:

- Select new perimeters to be rehabilitated:
 - **Timbuktu region:** Singo (70 ha), Bagadadji (45 ha), Daounakeina (55 ha)
 - **Mopti region:** Gobi (20 ha), Gounki (20 ha), Agro Silvo Pastoral (24 ha), Akka (30 ha), Seby (80 ha), Deibata (40 ha), Adou Karim (12 ha), Fanabougou (60 ha)
 - **Gao region:** Gassi (13 ha), Danga (38 ha)
 - **Sikasso region:** Zoloko (30 ha), N'Pegnesso (50 ha)
- Select partner NGOs (one per region) to implement and supervise community rehabilitation work.
- Select construction materials suppliers.
- Construct with labor intensive practices (HIMO), from March through July.
- Officially hand over the rehabilitated site to the authorities.

Anticipated result: Fifteen sites rehabilitated—approximately 2km per site (or a total of 30km) of principal and secondary canals for the regions in the north, covering 507 ha of arable land and 80 ha in the south—in conjunction with small retention dams. This engineering work will allow operating costs to be reduced (costs of diesel fuel, motor pump upkeep, and generator set operations) and will improve the durability of the irrigation system and facilitate better water management in an area totaling 587ha. In most cases, it will also improve adaptation to climate variability.

2.2 Rehabilitate and extend village perimeters and lowland rice cultivation areas using private enterprise.

In addition to rehabilitating perimeters and lowland areas with labor-intensive practices (HIMO), certain sites will require commercial construction work because, especially in the northern regions, the rehabilitation or extension must be done on sandy soils. IICEM will undertake the following tasks:

- Identify perimeters to be rehabilitated or extended, such as:
 - **Timbuktu region:** Kessoubibi (30 ha), Goubo (45 ha), Bagadadji (30 ha)
 - **Mopti region:** Baramadougou (30 ha), Kouana (33 ha)
 - **Sikasso region:** Gladié I and 3 (200 ha), Siramana (76 ha), Morila Mine SA (50 ha)
- Select consultancies for engineering studies and construction work supervision (one per region) to implement detailed pre-project technical studies, deliver technical specifications and other information for competitive bidding documents, and control and supervise construction.
- Select and recruit contracting firms for construction and development work.
- Monitor and provisionally accept construction, followed by official hand-over of sites to authorities.

Anticipated result: A total of 494 hectares rehabilitated and/or extended for rice cultivation in eight sites—168 ha in the northern regions of Mali and 326 ha in the Sikasso region.

2.3 Make diesel-powered motor pumps available in northern Mali.

At this time, diesel-powered motor pumps (GMPs) are fairly rare in the regions of Timbuktu, Mopti, and Gao. Orders take from 8 to 12 months to fill. To ensure greater availability of motorized pumps, and based on producer organizations' business plans, the project will use its guarantee fund to work with financial institutions to facilitate access to finance for the investments. IICEM will implement the following tasks:

- Develop a cost-sharing arrangement for 20 motorized pumps (16 TR3, 4 TR2) to support the IVPs.

- Help producer organizations (POs) with adequate financial capacity to establish a relationship with a bank and complete funding applications; establish a mid-term guarantee fund mechanism (e.g., a required deposit of 10 percent by the POs, 35 percent cost share by IICEM [40 percent for women's associations]).

Anticipated result: Achievement of a milestone in a larger plan to improve water management in the IVPs supervised by IICEM, which will enable partner POs to become credit-worthy. The table below gives an indication of the scale of the activity for 2010.

Region	Number of Sites/ POs	Number of Farmers	Number of Hectares	Volume Expected (Tons)
Mopti	40	3,192	922	4,750
Timbuktu	26	3,591	1,116	5,750
Gao	19	1,441	166	900
Total	85	8,324	2,203	11,400

2.4 Build management capacity to support IVP infrastructure and equipment, to promote sustained, optimal management of canals and diesel-powered motor pumps.

To accomplish this, IICEM will support training for POs on overall IVP management and on maintenance of GMPs. In addition, the ProMali Nord project has already trained junior mechanics to provide services to rice-growing cooperatives. They will be encouraged to equip themselves with spare parts, a key factor for successful IVP operations. The following tasks are foreseen:

- Train 20 junior mechanics in motor pump repairs and business management.
- Train mechanics interested in spare parts purchase to apply for funding: necessary deposits, requirements for annual reimbursements, off-season impact on reimbursements, etc.
- Support garage mechanics as service providers in opening spare parts shops in the three northern regions, through an initial project grant representing 50 percent of investments.
- Draw up agreements on IVP management, establishing water management committees and containing adequate provisions for canal and GMP maintenance, including a set-aside fund to purchase a new motor pump in five years.

Anticipated result: Operating costs reduced and longevity of the GMPs increased, through reductions in operating time and increases in preventive maintenance. With the support of service providers, breakdown time will be shorter, reducing the risk of harvest loss. Finally, the agreements will foster durability of infrastructure and equipment at the IVP level.

2.5 Promote and participate in installing farmer seed producers to ensure post-harvest management and establish perennial availability of improved seeds for the IVPs in the regions of Timbuktu, Gao, and Mopti.

In partnership with the First Generation Seed Unit (USB), a branch of the Institute of Rural Economics (IER), and the National Agricultural Directorate (DNA)/Regional Agricultural Directorates (DRAs), IICEM will manage the program for putting farmer-produced seeds in place. The following tasks are anticipated:

- Establish one IICEM/USB/DRA per region.

- Jointly identify large seed-producing cooperatives (and successful farmers) for the Timbuktu and Gao regions, to set up a program for seed production. In Mopti, the following cooperatives have been selected: Wafakoye at Diogui (15 ha), Djiguitougou at Kouakourou (3 ha), and Kormbanajigi at Korientzé (2 ha).
- Continue seed multiplication activities for the NERICA 4 variety on 15 ha in the Sikasso region, with women's seed cooperatives and other interested producers.
- Develop business plans (as a necessary condition for durability of the mechanism) so the POs can buy the seed produced to guarantee the incomes of the seed producers. This will enable seeds to be distributed efficiently at the local level.
- Demonstrate the SK variety with IVPs in the north (five IVPs per region).
- Support POs in producing radio broadcasts that give information on availability of seeds.
- Support POs in conducting seed exchanges.

Anticipated result: Improved seed available and utilized, from varieties preferred by farmers in the four regions, contributing to good yields of rice that meets consumer tastes. More than 200 farmer seed producers are expected to be involved in this operation.

2.6 Continue the System of Rice Intensification (SRI) program on a large scale.

IICEM will pursue this promising activity through the following tasks:

- Develop a contract with IER and DNA to implement SRI activities with the Regional Center for Agronomic Research (known as CRRRA) and DRA in the regions of Mopti, Gao, Timbuktu, and Sikasso.
- Continue forward momentum by developing manuals and films for teaching communities about rain-fed SRI.
- Promote a test of 36 ha in the 2010 off-season in order to understand the labor requirements of SRI.
- Develop SRI on the entire area of targeted IVPs in the 2010 season. Efforts will concentrate on two IVPs per region, to fully reach and transform the practices of all farmers.
- Organize inter-farm visits to share results of the newly introduced technologies.
- Introduce SRI to 20 producers in the Office for Rural Development of Sélingué (ODRS). A training-of-trainers will enable supervisory staff to train the 20 producers identified. Farming equipment specific to SRI will be produced in the area, and a farm "open house" scheduled to encourage farmer-to-farmer dialogue.
- Participate in the African rice congress in Mali to share experiences and promote dialogue between African nations about SRI experiences.
- Establish an SRI coordination platform (with Ministry of Agriculture authorization) with partners—including DNA, Africare, Syngenta Foundation, and IICEM—to build on participants' varied experiences. Set up regular meetings and exchange visits to successful work sites.
- Collaborate with ATP on its sub-regional SRI promotion activities within Mali.

Anticipated results: Large-scale dissemination of SRI, progressively mastered and adopted by most producers in the pilot IVPs. IVP productivity improved, with water use efficiencies and other input savings. Pilot IVPs serving as key advocates for SRI promotion in Mali.

2.7 Introduce new agricultural technologies and innovative agricultural equipment to men and women producers working along IICEM value chains, in order to improve soil management.

The new technologies include plowing and leveling fields, to improve the effectiveness of irrigation water, and using integrated pest management (IPM). Traditional manual or animal-drawn plowing systems do not lead to proper leveling or deep plowing, which can incorporate organic matter into the soil. This leads to rapid drainage of irrigation water away from the plot, wasteful use of water as a technique for weed control, and the nearly permanent presence of women in the rice fields for weeding. In order to introduce motorized technologies and agricultural innovations, IICEM will undertake the following tasks:

- Provide and introduce two roto-tillers and accessories for plowing, field leveling, and rice paddy formation, in conjunction with SRI activities in the regions of Mopti and Sikasso and including initial training by CAFON on good soil preparation techniques. If implemented successfully, this activity will help “spread the word” among producers in the north and the south about effectively using roto-tillers (currently, only the Office du Niger uses roto-tillers).
- Contract with the American Briggs and Stratton Corporation to bring in a 21-foot container with various types of equipment: roto-tillers with hoes, levelers, and attachments for rice paddy preparation; sowing attachments; rice transplanters; mini-harvesters and threshers, etc. for rice and other cereal and horticultural crops.
- Ensure that initial training is provided by Briggs and Stratton employees on use of the equipment.
- Establish a rotating system for producer organizations to test the equipment.
- Organize inter-farmer visits to share the results of the technologies disseminated.

Anticipated result: New, more effective agricultural equipment technologies disseminated.

2.8 Rejuvenate existing and establish new Lotio water management committees.

The Lotio is a river in Sikasso and neighboring villages around which thousands of potato producers and women rice growers work. Climate change and poor water usage practices (such as building multiple dams) create sources of conflict. The USAID-funded Agricultural Productivity Initiative in Mali (PRODEMPAM) had initiated a series of activities to improve Lotio water management so that the river could remain a livelihood source for all the beneficiaries. IICEM will continue these efforts by carrying out the following tasks:

- Rejuvenate/create village committees, in partnership with the Regional Administration for Rural Engineering (Direction Régionale de Génie Rural, or DRGR).
- Facilitate and support the creation of committees in the Lotio villages where there have not previously been committees.
- Facilitate and support the establishment of a framework for collaboration between the villages. The framework will include all actors: the hydraulic service, the Chamber of Agriculture, the local water committee, customary political and administrative authorities, etc.

Anticipated result: Better water management, which will help increase agricultural production.

Kayes

For the 2010 season, the IICEM project will identify an organization of men and women producers to conduct activities in the Kayes region. This will be the project’s first experience in Kayes, and will facilitate pursuit of IICEM’s value chain strategy in this region. The IICEM target is production of 120 tons of rice in the region.

2.9 Research and identify good partner producer organizations and possibly rehabilitate one or two village perimeters.

For the first year of operations in the rice value chain in the Kayes region, the project will work to identify a producer organization that demonstrates good management. IICEM will conduct the following tasks:

- Select one or two new perimeters to rehabilitate.
- Select the partner NGO for implementation and supervision of community rehabilitation.
- Select construction materials suppliers.
- Rehabilitate irrigation infrastructure with labor intensive practices (HIMO), from March through July.
- Introduce best agricultural practices, including SRI, in demonstrations.
- Officially hand over the rehabilitated site to the authorities.

Anticipated result: Rehabilitation of three sites, followed by take-over of the construction work by the Kayes local authorities.

RICE ACTIVITY CLUSTER 3: IMPROVING FINANCIAL SERVICES

To reach the project's objectives for the production and marketing of rice, IICEM will support farmer organizations in mobilizing 150 million CFA in financing.

3.1 Organize functional literacy training sessions for women rice producers in the Sikasso region.

To better equip women rice producers in Sikasso to manage their businesses, which are increasing in productivity and profitability, IICEM will:

- Organize 30-day refresher literacy sessions for groups already trained in Year 2 of the first phase of IICEM (in Bamadougou, Finkolo Village, Gladié, Loutana, M'Pegnesso, Niéna, and Nantoumana).
- Organize 45-day literacy training sessions, followed by 30-day refresher sessions, for the remaining groups (in Kouroumasso, Ouogan, Finkolo Ganadougou, and others).
- Support community-based construction of a literacy center equipped with chairs, tables, benches, and a blackboard for the Union of Women of Finkolo Ganadougou.

Anticipated result: A total of 600 women functionally literate in Bambara.

3.2. Facilitate access to finance for agricultural inputs.

To facilitate producers' access to agricultural inputs, the project will carry out the following tasks:

- Support cooperatives in developing funding applications, and encourage them to proactively monitor their applications with financial institutions.
- Organize meetings to improve collaboration between financial institutions and cooperatives and to directly discuss the conditions for obtaining loans.
- Organize a workshop to encourage business relations between producers, traders, and bankers at certain sites in Mopti.
- Develop and introduce tools for calculating the costs and fees required for POs to cover operating costs and meet capital investment needs.
- Ensure monitoring/advice for producers on judicious use of loans.

Anticipated result: Better use of producer organizations' resources for planning, in order to avoid paying prohibitive costs in interest on loans. Mobilization of 150 million CFA by credible producer organizations.

3.3 Negotiate a partnership with WASA to support agro-dealers.

To ensure the availability of inputs at the IVP level, agro-dealers need organization and support. To provide such support to this link in the value chain, the West African Seed Alliance (WASA) project has set up a

program, which will intervene this year for the first time in Mopti. IICEM will participate in the following tasks established by WASA:

- Identify and rapidly evaluate input traders/agro-dealers (WASA).
- Provide training in basic management for selected agro-dealers (WASA).
- Establish business plans (IICEM).
- Facilitate relations between agro-dealers and financial institutions, in order to ensure inputs for all the producers (IICEM).

Anticipated result: Agro-dealers identified, capacity of the agro-dealers built, and business relations established between agro-dealers and financial institutions; improved supply and availability of inputs for producers in the Mopti region.

3.4 Increase awareness and train producer organizations to develop internal mechanisms for securing loans.

To create and maintain confidence between the financial institutions and targeted producers, IICEM will conduct the following tasks:

- Train organizations on management of collective loans.
- Train organizations on fixing rates or fees.
- Train organizations on the mechanisms of capitalization and mobilization of internal resources.

Anticipated result: Loans reimbursed, with a target minimum reimbursement rate of 95 percent.

Kayes

To achieve the objectives for marketing rice, as well as other cereals, in the Kayes region, IICEM will support the Coordinating Office's women's processing associations in mobilizing funding for 75 million CFA in cereal purchases. The activities to be carried out are described below.

3.5 Facilitate access to finance through a revolving fund for cereal purchases.

To facilitate producers' access to agricultural inputs, the project will conduct the following tasks:

- Deploy an accountant to obtain certified financial statements (if possible) and to evaluate the Coordinating Office's financial capacity.
- Support the Coordinating Office in applying for funding to purchase cereals and facilitate relations with a bank or micro-finance institution.
- Develop, with the associations and the Coordinating Office, a repayment schedule based on sales that lead to sustainability and profitability.

Anticipated result: Funding of 75 million CFA mobilized by the Coordinating Office and its 30 member associations.

3.6 Build the financial management capacities of the Coordinating Office and its member associations.

In order to improve internal management and governance, the project expects to train the Coordinating Office and its member associations, using simplified teaching tools, on topics such as establishment and maintenance of management documents for organizational activities, loan management, and development and presentation of accounts for operations and balance sheets.

Anticipated result: A total of 50 women trained in and applying improved management tools.

RICE ACTIVITY CLUSTER 4: IMPROVING THE AGRICULTURAL AND TRADE ENVIRONMENT

4.1 Deliver training on the Law on Orientation of Agriculture (LOA) and its decrees, as well as on the regulations relating to trade, in order to increase advocacy and facilitate trade.

The project will:

- Provide training on respect for the rules of trade and competition.
- Organize a conference and discussion in Mopti on regulations related to trade in agricultural produce in WAEMU and ECOWAS zones.
- Participate in various meetings that will establish a rice *interprofession* at the national level. (In Mali, an *interprofession* is a group of public, civil society, and private sector representatives organized around improving, coordinating, and lobbying for a particular business cluster.)

Anticipated result: Improvements in the agricultural and commercial environment. Training for leaders of five unions during three days, and a conference and discussion including 75 persons. IICEM and its partner organizations will actively participate in rice interprofession meetings.

Kayes

4.2 Strengthen organizational and institutional skills of the Coordinating Office and its 30 member associations, with an emphasis on advocacy.

The project will undertake the following tasks:

- Conduct a simplified organizational diagnosis of the Coordinating Office, using the USAID Partner Institutional Viability Assessment (PIVA) method, at the start of the year to establish a baseline and later at the end of the year to evaluate progress.
- Develop and deliver a training program on the roles and responsibilities of the Coordinating Office's female leaders.

Anticipated result: Improved capacity among the Coordinating Office's female leaders and an understanding of potential steps to improve the organization and strengthen its advocacy.

4.3 Support advocacy aimed at facilitating trade with Senegal.

Efforts will be driven by the preferences of Senegalese buyers, in order to establish a durable trading partnership that is profitable for the women.

- Train women in trade and to negotiate contracts with Senegalese wholesale cereal dealers.
- Participate in the Project to Mobilize Food Security Initiatives in Mali (PROMISAM) advocacy activity on the border with Senegal, in order to facilitate further cross-border trade.
- Support women's advocacy efforts to facilitate cross-border trade.

Anticipated result: Agricultural and commercial environment improved, enabling the Coordinating Office to carry out trade with Senegal with less red tape, at lower cost, and with higher volumes.

B. MILLET AND SORGHUM

In year two of the first phase of IICEM, the IICEM collaborated with INTSORMIL, a program run by IER and American universities with support from USAID. To understand the producer organizations better, IICEM conducted organizational diagnoses in 6 of the 10 villages covered by INTSORMIL. INTSORMIL is now entering a phase of capacity-building for producer organizations, delivering its entire technical package from production through marketing. IICEM will partner with INTSORMIL for larger scale extension work.

The Value Chain Challenge

Millet and sorghum are staple food crops in Mali. They occupy over 70 percent of cultivated areas in the country and are consumed by more than 80 percent of the population. The quantities of millet produced in Mali are exceeded only by rice. If the quantities of sorghum, practically identical to those of millet, are added, then production of millet and sorghum is considerably greater than that of rice. Given the volume of these cereals consumed and the sheer size of the population that consumes them, millet and sorghum occupy a very strategic position in efforts to meet food security and poverty reduction objectives in Mali.

Despite the heavy consumption of these two cereals among the rural population in Mali, consumption by urban populations is decreasing in favor of other products, particularly rice, which takes less time and effort to prepare. This is a worldwide phenomenon: as urban incomes increase, consumption of millet and sorghum decreases. Certain experiences in West Africa show, however, that urban demand can increase if table-ready products derived from millet and sorghum are made available. In Mali, processing of these table-ready products is just starting, with support from the INTSORMIL program.

It has to be recognized that, despite the favorable status of these cereals, the value chain does face some constraints, notably:

- The urban population consumes less millet and sorghum because it is difficult to process these grains into ready-to-eat food.
- Urban consumption is impeded by the effort it takes to clean these cereals (dust, small stones, and other foreign matter are found in the sacks).
- Only small quantities of ready-to-eat millet and sorghum or semi table-ready (already cleaned and processed) products are available in upscale grocery stores.
- Recapturing a portion of urban consumption is key for maintaining levels of demand, but difficult given the significant improvements needed in terms of quality and processing.
- Regarding processing, there are no state or development programs focusing on adding significant value.
- The production of millet and sorghum remains totally dependent on conditions that are affected by climatic events and variability, hence the need to obtain improved seeds adapted to drought and introduce water-retention techniques.
- Yields remain low among small farmers, typically varying from 800 to 1000 kg per hectare, due to continued use of old varieties.
- Research has produced many varieties with yields able to reach between 1500 and 2500 kg per hectare but, without appropriate means and strategies for extension work, these results remain unknown to the public.
- Storage problems, along with other difficulties, oblige producers to sell their production at cut-rate prices during the post-harvest glut.

In view of this series of problems, IICEM will provide the value chain with assistance in marketing and production, and with access to financial products tailored to resolve the biggest constraints.

Strategy

Urban consumers are substituting other foods for traditional millet and sorghum dishes, in part because of the time and effort required to prepare these dishes from whole grain. In addition, sacks of grain contain a significant portion of dirt, stones, and foreign matter, and substantial time (or money) must be spent to clean the grain properly before beginning food preparation. Worldwide, there is a trend of urban populations purchasing processed foods that are often partially pre-cooked and ready, or nearly ready to use. While various forms of millet and sorghum flour and grits are available in one kilo sacks in upscale grocery stores, this type of processing is still very limited and the products expensive.

IICEM will work with INTSORMIL to improve processing of millet and sorghum and to make better equipment available. The project will also provide technical assistance and use available financing mechanisms to help commercial and artisanal processors expand their activities. This will be a long-term process, but will contribute to increasing the demand for the products of smallholder farmers and, in the process, will help meet urban food security needs with domestic products. The employment generated by processing will also contribute to increased incomes and poverty reduction.

In the future, sorghum may play an increased role in animal feed, although it has a challenge competing with maize. Kilo for kilo, maize is slightly more productive than sorghum as an animal feed. Use of cereals in animal feed is dominated by the poultry sector, which prefers maize to sorghum, particularly for egg production. Most consumers prefer that their eggs have yellow yolks, which are produced when chickens are fed maize. Unless other additives are used, feeding chickens sorghum does not produce the same effect. For this reason, sorghum is competitive with maize only when it is somewhat cheaper; in Mali, however, maize is typically cheaper than sorghum.

The productivity of a typical millet and sorghum producer has increased little in recent decades—growth in production has been small and based largely on increased area rather than improved yields. Most sources agree that to increase incomes and improve livelihoods, productivity must increase. IICEM is collaborating with the IER, DNA, INTSORMIL, and local NGOs to scale up the use of improved millet and sorghum varieties, which are at the core of increased productivity. The NGOs and DNA provide the extension support needed to introduce improved production practices and improved seed. IICEM will use its financial tools to support access to finance for participating producers, enabling them to complement the seed with fertilizer and other improved inputs.

Sorghum and particularly millet are grown in agro-ecological zones that are often too dry for the production of other cereals and staple food crops. Climate change projections suggest that rainfall may be even more limited in the future. Ways to increase food security and adapt to climate change include producing millet and sorghum using techniques such as water harvesting; increasing production by using more productive, shorter-cycle, and more drought-tolerant varieties; and using other improved production practices.

Millet and, to a lesser extent, sorghum also play a role in providing food for vulnerable populations. Millet has a higher protein content than other cereals and is reputed to have advantages with regard to digestibility. Millet and milk form a fairly nutritious meal than can be eaten by elderly persons who have lost their teeth. Both millet and sorghum are often recommended for diabetics. Thus they help address some aspects of diet and nutrition.

Implementation

The IICEM project will pursue organizational and institutional strengthening of producer organizations in INTSORMIL's intervention villages. To implement these activities, IICEM and INTSORMIL will collaborate with the NGO SG 2000, the NGOs intervening in the target villages, and the DRAs applying an inclusive approach. Implementation of this combined strategy will consist of the following:

- Organizing training-of-trainers (conducted jointly by INTSORMIL and IICEM) for DRA and partner NGO agents.
- Explaining the intervention strategy clearly to targeted villages (INTSORMIL sites) so that they can accept it and join willingly.
- Setting up village committees of community leaders to support and facilitate all project activities in the villages.

In addition, IICEM will work with millet and sorghum processors to identify their needs and explore opportunities to expand their processing activities to respond to consumer demand. IICEM will work with the INTSORMIL program to introduce and use financial tools to improve access to finance for potential processors.

The following tables present a brief analysis of the demand for millet and sorghum in Mali. It also summarizes IICEM's interventions.

TABLE 3: MILLET DEMAND IN MALI AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • Consumers include rural communities, the poor in urban areas, and consumers in the peri-urban areas of countries in the sub- region. • Millet is consumed by all socioeconomic sectors of the population in traditional dishes, light evening dishes, provisions for journeys, meals for the elderly, diabetics, etc. 	<ul style="list-style-type: none"> • There are approximately 1.5 to 1.6 million hectares of millet (3.0 to 3.4 million hectares of cereal) production, the majority of which are in arid zones with a high risk of poor harvests. • Producers generally utilize an extensive strategy with low usage of fertilizers (planting in various micro environments). • Techniques for water retention (tied-ridging, utilization of contour ridges) can be effective, but inciting producers to invest in them is a real challenge. 	<ul style="list-style-type: none"> • Promote production and marketing of millet-based products. • Promote water retention techniques to increase yields and reduce the risk of poor harvests.

TABLE 4: SORGHUM DEMAND IN MALI AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • Consumers include rural populations, the poor in urban settings, and peri-urban consumers in countries in the sub-region • Sorghum is used by processors of animal feed, particularly poultry feed. • Sorghum is generally purchased as whole grain, which makes family preparation of sorghum-based recipes long, imposing constraints on the consumer. Pre-cooked couscous with relatively quick preparation is a competitor to rice for quick home preparation. 	<ul style="list-style-type: none"> • Consumers are not used to purchasing flour, pasta, couscous, or processed products. • Sorghum has a poor image in the eyes of consumers. • Certain consumers prefer eggs with very yellow yolks, produced by feeding poultry maize (but not sorghum, unless carotene is added). • Equipment and local processing adapted to production of pre-cooked couscous is still at the testing stage by INTSORMIL/IER. • Traditionally, yields are low and sorghum is produced in moderate risk areas in terms of rainfall. Producers generally use an extensive production strategy with low utilization of inputs. • High yield INTSORMIL varieties provide a basis for intensification but require use of chemical fertilizers to produce high yields. • Adoption by producers requires a major behavior and attitude change. • Utilization of improved seed and fertilizer is hampered both by their limited availability and high cost, and 	<ul style="list-style-type: none"> • Evaluate end markets and monitor preferences of consumers, processors/ traders; purchases; and sale prices for various varieties of sorghum. • Support INTSORMIL/IER testing and demonstrations of sorghum processing and animal feed milling, particularly through BDS services, advice for entrepreneurs, and facilitation of access to finance. • Utilize behavior change techniques to help change consumers' perception of sorghum-based processed products. <p>Help the producers of food grains in Ségou and Koulikoro to:</p> <ul style="list-style-type: none"> • Collaborate with the CRRA to widen distribution of first-generation seeds. • Collaborate with the DRA and establish partnerships with NGOs to work with POs to improve seed multiplication among their members (growing practices, quality control). • Improve extension messages and strengthen monitoring of the seed multipliers. • Utilize behavior change approaches to improve extension service messages and

	by producers' lack of access to funding sources.	<p>promote a change of attitude among producers in relation to growing sorghum.</p> <ul style="list-style-type: none"> • Facilitate linkages between POs and financial institutions by setting up loan guarantees, in order to improve access to finance for agricultural inputs. • Work with the Government of Mali and the private sector to ensure availability of appropriate fertilizers.
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MILLET AND SORGHUM ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

This series of activities is aimed at better understanding the millet/sorghum value chain, which will serve as the basis for future activities to increase marketing and market access by value chain stakeholders. Overall, the IICEM project's goal is the marketing of 200 tons of millet and 300 tons of sorghum. At the processing level, the project's goal is the processing of 50 tons of millet and 50 tons of sorghum. Through INTSORMIL's male and female producer organizations, supervised by an NGO for the Koutiala region and by SG 2000 for the Ségou region, the IICEM project will carry out the activities described below.

1.1 Promote group sales and access to the market.

This activity will improve transaction efficiency and strengthen the negotiating position of INTSORMIL producer organizations with respect to wholesale purchasers and processors. This will enable more rapid movement of their stocks at better sales prices. To do this, IICEM and INTSORMIL will:

- Train officials of producer organizations and village committees on the mechanism for group sales, techniques for negotiating sales contracts, creation and maintenance of management documents for stocks, and creation of activity reports and seasonal annual balance sheets.
- Facilitate the identification and establishment of business linkages between female processors and milling units.

Anticipated result: Training for 60 producer organization and village committee officials. After this training, the village committees will facilitate the marketing of at least 200 tons of millet and 300 tons of sorghum.

1.2 Improve post-harvest quality by facilitating the use of a quality packaged product.

To improve the quality of post-harvest activities, from threshing to bagging, IICEM will:

- Contribute groundsheets to new villages to prevent small stones and other impurities during threshing.
- Contribute triple-layer plastic bags to ensure longer storage by maintaining the quality of cereals.

Anticipated result: Clean cereal bagged in reliable bags, to facilitate storage and future marketing with greater added value.

1.3 Build storehouses.

This activity is important to secure and better preserve the products to be marketed; it will make an important contribution to bulk/group sales. Coverage for construction expenditures will be defined in

agreements with producer organizations, following the community approach and using HIMO work. IICEM and its partners will conduct the following tasks:

- Establish collaboration agreements between the villages and IICEM, defining each village's cost-sharing conditions.
- Determine specifications for village storehouses (materials, size of the warehouse, etc.).
- Construct storehouses.
- Hold public opening ceremonies for the village storehouses.

Anticipated result: At least eight 50-ton capacity storehouses constructed in INTSORMIL villages in the Mopti region; at least ten 100-ton capacity storehouses constructed in the other regions. In addition, IICEM will support stocks of more than 1,400 tons of millet and sorghum.

1.3.1 Introduce modern processing equipment.

To increase value added, IICEM will support production initiatives, such as those of the INTSORMIL program, by introducing modern processing equipment. To do this, the project will carry out the following tasks:

- Identify women's organizations and millet and sorghum marketing and processing enterprises throughout the regions covered by IICEM.
- Establish partnerships between organizations and enterprises to help them market and process quality products.
- Organize visits to the IER/INTSORMIL incubator of processed products (to be set up in mid-2010) for hands-on, experimental training, exposure to various types of modern equipment, and encouragement to pursue a more sophisticated level of processing for millet/sorghum.
- Organize training sessions on equipment with interested organizations (such as AfriqueVerte, Faso Jigi).
- Defray the purchase cost and support women in preparing requests for financing to purchase equipment. Once in operation, the equipment will have a demonstration effect for other producers.

Anticipated result: Stakeholders' knowledge improved; modern processing equipment available, along with various cereal products that can be processed. In the future (potentially in the project's second year), the purchase and utilization of modern equipment is anticipated, as well as sales of produce with high added value by processing associations and enterprises on the local and sub-regional markets.

MILLET AND SORGHUM ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

IICEM and INTSORMIL support men's and women's producer organizations for millet/sorghum. These organizations farm on 1,000 hectares across five regions: Mopti, Sikasso, Kayes, Ségou, and Koulikoro. Seven of these producer organizations grow sorghum on 630 ha, which is equivalent to 63 percent of total land cultivated. In the first year of scaling up, the project will facilitate millet/sorghum plantations on a minimum of 2,500 ha using INTSORMIL's improved production program. A minimum production of 3,750 tons, with an average minimum yield of 1.5 tons per hectare, is anticipated. This increased production and productivity will be reached through the following activities.

2.1 Build the capacity of agricultural field agents and producer organizations.

IICEM, with technical support from U.S. researchers and IER, will strengthen the capacity of field monitoring agents in the sites under supervision. The following tasks will be carried out:

- Consult on the establishment of a work plan with INTSORMIL, IER, relevant NGOs, or DRA and SG2000, as appropriate.
- Contract with NGOs or DRA, according to site requirements, and with SG2000 for the Tingoni area.
- Train the field agents who are facilitating the improved production program, in partnership with INTSORMIL.
- Train producer organizations, based on the training packages anticipated.
- Provide technical and administrative monitoring (by IICEM regional offices).

Anticipated result: Strengthened capacity among agents that support and monitor millet and sorghum activities. Agents trained in the INTSORMIL methodology will help producer organizations implement INTSORMIL's recommended practices. Transfer of skills will take place in the field.

2.2 Support access to improved seed and support the purchase of inputs by IICEM-assisted cooperatives.

IICEM will provide improved seed for the targeted villages, and will help producer organizations obtain loans to purchase inputs, an important factor in boosting productivity. Together with IER and INTSORMIL, IICEM will pursue the following tasks:

- Purchase approximately nine tons of improved seed from the Koutiala cooperative and from villages with certified seeds available (or from IER) for the Tingoni area.
- Store and then have NGO partners distribute seed to each producer at the start of the season.
- Support group purchases of inputs for the old cooperatives and through access-to-finance activities (Cluster 3), and provide inputs for the new villages targeted by INTSORMIL for demonstration activities (50 ha per village; 200 ha in the Kayes Region).

Anticipated result: Millet and sorghum produced in a manner consistent with INTSORMIL technical recommendations, facilitating yields of 1.5 to 2.0 tons per hectare.

MILLET AND SORGHUM ACTIVITY CLUSTER 3: IMPROVING FINANCIAL SERVICES

In order to reach production and marketing objectives, IICEM will support producer organizations in preparing and submitting applications for \$150 million CFA in financing. Because funding dry cereals holds higher risk, due to dependency on sometimes-precarious rainfall, the project has developed an integrated series of activities to reduce and mitigate (to the extent possible) the agricultural and financial management risks of lending for millet/sorghum production and marketing.

3.1 Negotiate and develop adapted loan products with the financial institutions: agricultural season loans, and loans for storage of dry cereals, particularly millet and sorghum.

IICEM will facilitate business relationships between producer organizations and local funding organizations in order to develop two products:

- An agricultural season credit product (for fertilizers, for example) from June 1, 2010, through December 31, 2010.
- A credit product to fund food crop storage from January 1, 2011, through May 31, 2011.

Anticipated result: An agreement established between INTSORMIL-supported POs and at least one financial institution, to secure the complete financing plan (agricultural season and marketing) and facilitate the highest possible added value.

3.2 Facilitate access to finance for agricultural inputs and storage.

To facilitate producers' access to agricultural inputs, and to delay sale of harvested commodities until the most advantageous time, IICEM and its partners will conduct the following tasks:

- Support the cooperatives in producing finance applications and encouraging them to proactively follow up on their files with the financial institutions.
- Organize meetings between financial institutions and cooperatives to reach agreements and hold direct discussions on loan terms.
- Monitor and provide advice to producers on the judicious use of loans.

Anticipated result: Improved usage of OP resources, thanks to better planning, so they can avoid paying prohibitive costs and interest rates on loans. Credible farmer organizations will mobilize 150 million CFA.

C. MAIZE

Maize has shown significant growth over the past 30 years in Mali, although this will be a new value chain for IICEM. Maize is the most important food crop in the region of Sikasso, where production was over 706,000 tons in 2007/08 in a total cultivated area of over 412,000 hectares. (source: Cellule de Planification et de Statistique/Ministère d'Agriculture) Maize is also in great demand for animal feed, particularly for poultry. In addition to Sikasso, maize is important in the regions of Ségou, Koulikoro, and Kayes and—more generally—for urban consumption. Cracked maize (grits) is in demand for preparation of various foods, and many bakeries mix a percentage of maize flour with wheat flour to make bread. Maize is frequently exported to Burkina Faso, Senegal, and Mauritania and there are significant exchanges with Ghana and Côte d'Ivoire, depending on rainfall and the outcome of the agricultural season.

The Value Chain Challenge

Maize production in Mali has increased approximately 16 fold over the last 30 years, in part because of the role it played in the cotton production rotation system that was promoted by the Malian Company for Textile Distribution (CMDT). Because maize is highly responsive to fertilizer, it was planted in rotation, following cotton. This system allowed the maize to benefit heavily from the residual effect of the fertilizer (phosphate) used on the cotton. Farmers in the south often jumped from producing 600 to 800 kgs of millet or sorghum per hectare to producing 1,200 to 1,600 kgs of maize per hectare under the cotton rotation system. Cotton production is now declining; maize's privileged role must also change. Farmers will need to generate a surplus from the maize that will allow them to pay for fertilizer and other inputs to increase, or even to maintain, maize productivity. This will require the adoption of improved seed and other improved production practices and an alternative means of accessing finance.

Historically, maize was the primary food staple in the south but was not heavily consumed in the north or in urban areas such as Bamako, Segou, and Mopti. Knowledge has increased substantially over the years, however, about how to prepare maize dishes and about their consumption, particularly in urban areas. The huge increases in productivity and production of maize, coupled with the relatively modest pace of increased consumption, has often placed downward pressure on maize prices. Maize prices are often a bit lower than the prices of millet and sorghum throughout the year. These lower prices are an important aspect of the demand for maize in animal feed, but maize is also a little more productive, kilo-for-kilo, than millet and sorghum for animal feed. Over time, maize has become an important contributor to food security—as a human food staple, as a source of producer income, and as the cereal most used in animal feed and meat production. Thus, maize makes multiple contributions to income generation and poverty reduction for smallholder farmers.

The maize value chain faces a number of problems, including the following:

- Producers face difficulties marketing maize and its sub-products, due to i) a price differential between the harvest period (December–January) and the time known as the pre-harvest hungry period (July–August); ii) the absence of a collective mechanism for marketing by producers (leading

to the sale of harvest excess production at a low price on local markets); iii) difficulties preserving processed maize sub-products (flour, semolina) because of the absence of the technology to remove the germ from the grain; and iv) producers' low level of access to market information.

- It is difficult to access agricultural inputs; these difficulties are accentuated by inadequate lines of direct credit to fund inputs for maize. Maize production remains dependent on the cotton rotation system. With the decline of cotton production, problems can be anticipated in maintaining maize productivity. Even greater difficulties can be seen in maintaining maize's current production level as an alternative system of production to cotton.
- Yields are low, varying from 1.2 through 1.6 tons per ha, brought about by i) producers' utilization of less productive maize varieties (most varieties cultivated date back more than 10 years); ii) producers' limited access to technical and economic information on quality inputs (fertilizers, herbicides, and improved seed); and iii) low levels of adherence to good practices for Integrated Soil Fertility Management/Integrated Crop Management (ISFM/ICM).

Despite these bottlenecks, maize production has grown faster than production of other coarse grains and maize has enormous potential to build up a more competitive value chain that would benefit all stakeholders. The existence of national and sub-regional market demand for maize for human and animal consumption, linked to the presence of value chain stakeholders (input suppliers, producers, processors, traders, etc.) argues strongly in favor of promoting the maize value chain in Mali.

Strategy

The IICEM project will apply its value chain approach to this new commodity, beginning with improving knowledge about the markets for the various maize-based products available at the local, national and sub-regional levels. These market studies will be accompanied by an analysis of i) the maize value chain, ii) its production, iii) the availability of inputs, and iv) the end markets for various maize-based products. The project will identify ways to make the value chain more functional and more efficient, reduce costs, and increase revenue to benefit all stakeholders, especially smallholder farmers.

Maize in Mali has always faced challenges with regard to overall demand. Despite this, production has expanded at a very rapid pace, in part because of price—people have been encouraged to consume maize because it has been typically priced somewhat lower than millet and sorghum, and it is significantly cheaper than rice. Other than this price advantage, maize faces demand problems similar to those facing millet and sorghum:

- Creating a meal from whole grains such as maize is a slow and difficult process.
- Urban consumers are discouraged by the dirt, stones, and foreign matter they find mixed with the grain and by the time and effort required to clean it.
- Ready or nearly ready-to-eat (processed) maize products are not readily available.
- Capturing a portion of the urban trend towards the use of prepared foods is critical to increasing overall demand for maize, but difficult given the significant improvements that will be needed in quality and processing. The entire food and agricultural sector must adapt to meeting the needs of this urban market or find itself increasingly marginalized and the quantity and cost of food imports mounting.

IICEM has identified a partner that may help to overcome one important constraint to maize processing. Moulins de Sahel (MDS) is building a factory to produce de-germed flour, grits, and other maize products, which will extend the shelf-life of processed maize products, since the presence of the germ increases the speed at which products become rancid. MDS does not have a supply chain for its 120,000 ton per year factory; IICEM will help the firm establish linkages with maize production associations. IICEM will continue to work with the producer organizations to increase productivity, quality, and grain uniformity, and to adapt

to the needs of MDS. While MDS is only a small part of the maize market, it is important because its products target the urban market and it can provide an example of how local products can succeed in that market.

In collaboration with the USAID-funded Agribusiness and Trade Promotion (ATP) and Extended Agribusiness and Trade Promotion (E-ATP) projects, IICEM will also establish contact with livestock (particularly poultry) producers, to explore ways to promote improved animal feeding using local feed products. This is an important and growing market for maize products.

Recently, it has been recognized that under some production and storage conditions, maize can have serious aflatoxin issues. IICEM will bring this issue to the attention of value chain stakeholders and work with them to minimize the presence of aflatoxins.

Climate change models suggest that maize will be one of the commodities most affected by climate change. IICEM will work with the IER, DNA, WASA, and other seed organizations to introduce maize seed that has shorter cycles and is more resistant to moisture stress.

Implementation

To implement this strategy, the IICEM project will focus on:

- Conducting market surveys for maize-based products at the local, national, and sub-regional levels.
- Analyzing the maize value chain and its operations—from production through end markets (from the field to the fork).
- Identifying strategic partners—such as the MDS mill, the Groupe Ami factory for animal/poultry feed, and Bramali—to encourage large-scale processing.
- Improving post-harvest handling, particularly threshing and drying.
- Improving purity and cleanliness of the grain.
- Improving the capacity of producer organizations in grouped sales and storage.
- Facilitating linkages between selected producer organizations and companies that purchase maize for processing.
- Building management and governance capacity of IICEM-supported producer organizations and of the agricultural sector in general.
- Facilitating producers’ access to finance, to promote the use of improved inputs and growing practices.

The following table presents a brief analysis of the demand for maize in Mali and summarizes IICEM’s planned intervention for the coming years.

TABLE 5: MAIZE DEMAND IN MALI AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • Traditionally, maize is more often consumed in the south of Mali. There is a need to increase acceptance and knowledge of preparing maize-based dishes among other socio-economic groups. • There is significant 	<ul style="list-style-type: none"> • Mali’s maize production has increased 16 fold over the past 30 years, often resulting in falling prices. Demand needs to be increased, in part through commercial marketing activities, to reduce negative effects this rapid growth in production has on sales prices. 	<ul style="list-style-type: none"> • Evaluate end markets and monitor preferences of consumers, processors, and traders. Monitor purchases and prices of various maize varieties. • Evaluate maize processing techniques, scale, and performance/quality. • Support efforts of MDS to propagate use of maize by producing products with the germ removed. Facilitate links between MDS and producer organizations, to develop relations within the value

TABLE 5: MAIZE DEMAND IN MALI AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<p>demand by livestock breeders and millers of animal feed, especially for poultry.</p> <ul style="list-style-type: none"> • There is cross-border trade for human and animal consumption. • ATP has undertaken a regional evaluation of the maize value chain and conducted a workshop for policy advocacy. 	<ul style="list-style-type: none"> • Ground maize (flour, etc.) is not easily stored unless it is ground after the germ is removed. Small-scale mills are not adapted to remove the germ. • Maize productivity in southern Mali has been dependent on cultivation in rotation with cotton. As cotton production declines, maize producers must find another strategy to pay for agricultural inputs. • Cross-border trade is largely informal and disorganized. • There are unofficial seasonal bans on exports of maize (and other cereals). 	<p>chain.</p> <ul style="list-style-type: none"> • Evaluate the structure, management, and performance of the brewing/food distribution industry in Mali and possibilities for improvement. • Evaluate productivity and appropriateness of alternative maize varieties and of varieties available in Mali for various end users (food, food products, grits for brewing). Help users and purchasers delineate technical and quality criteria. • Promote multiplication and scale up of promising varieties. • Stimulate investment in storage and marketing of maize. • Strengthen capacities of producer organizations and technical stakeholders, to exert pressure against the arbitrary imposition of bans on maize (and other grain) exports and price controls.

MAIZE ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

The first task is to acquire better knowledge of current and potential trading circuits for maize. There are signs of significant local trading towards Bamako, Burkina Faso, Senegal, and Mauritania. This information needs to be verified, and the profitability of these various circuits (and the particularities of each) identified. Based on this knowledge, IICEM will develop an appropriate strategy for future years. In year one, following production on 2,500 ha, IICEM will improve market access for 4,500 tons of maize, and 500 tons of processed maize products.

1.1 Launch a study of the maize value chain.

To improve the value chain's level of competitiveness and confirm strategic axes for the IICEM project, the following tasks will be conducted:

- Recruit an international maize expert to serve as a consultant.
- Inventory and review recent literature on the maize value chain.
- Establish an agreement and coordinate between the IICEM maize manager and the maize value chain manager for ATP and its extension project
- Carry out surveys, interviews, and an analysis of productivity and the market.

Anticipated result: A study of the maize value chain in Mali completed, providing a rapid overview and enabling the project to determine a strategic orientation for the maize value chain.

1.2 Facilitate business relationships between processors and producers.

In order to create a systemic change, IICEM will develop business relationships that will support the framework for the whole chain. The project will conduct the following tasks during the first year:

- Evaluate the strategy for helping MDS develop an adequate supply chain with producers.

- Evaluate the strategy for setting up a supply chain for women producers of improved cracked maize and for other maize processors.
- Initiate contractual relations, if possible.

Anticipated result: Possible business relationships developed that will facilitate development of the value chain in a manner that adds value at the level of production and marketing.

MAIZE ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

To start, the project will target the Sikasso and Koulikoro regions for productivity activities. A partnership with the Mali Biocarburant SA Company and the Association Malienne d'Eveil au Développement Durable (AMEDD) in Koutiala will be signed, which will permit implementation of a program for improved maize production on 1,000 ha in Koulikoro and 500 ha in Koutiala. Other production areas (up to 1,000 ha) will be identified in the Sikasso region, which can be added to the original area. The sites and area will depend on the availability of improved seed for the next agricultural season.

2.1 Introduce improved seed and support the emergence of private seed production.

IICEM will work with USB, WASA, and seed-producing cooperatives to secure improved seed for the 2010 agricultural season, carrying out the following tasks:

- Purchase 20 kg of improved seed per hectare (about 30 tons to cover 1,500 hectares) and distribute to producer organizations that qualify for financial services.
- Contract, if necessary, with Faso Kaba and other seed-producing cooperatives (principally in the Sikasso region) to execute the program.
- Develop a monitoring system through NGOs and other programs such as WASA.

Anticipated result: Adequate quantities of improved seed available for the 2010 agricultural season for the 1,500 hectares receiving support.

2.2 Support the use of fertilizers by producers of 2,500 hectares of improved maize.

In the first year, IICEM will build partnerships to support around 4,000 to 5,000 maize producers, covering 2,500 hectares. To do this, the project will:

- Identify zones of high production.
- Identify the financial institutions already supporting maize production.
- Identify organizations to develop the maize value chain.
- Contract with the organizations most likely to succeed in advancing the IICEM strategy.

Anticipated result: Contracts with organizations able to support rural communities involved in the maize value chain, to facilitate 2,500 hectares of improved maize production. Improved seed and fertilizers will allow yields to increase from 800 kg per hectare to around 2 tons per hectare.

MAIZE ACTIVITY CLUSTER 3: IMPROVING FINANCIAL SERVICES

To reach maize production and marketing objectives, the IICEM project will support farmer organizations in the mobilization of 200 million CFA in financing. Selected farmer organizations will be those that utilize improved varieties and can respond to the needs of processors and other significant purchasers of maize.

3.1 Facilitate access to finance for agricultural inputs.

To facilitate producers' access to agricultural inputs, the project will conduct the following activities:

- Support cooperatives in preparing funding requests and help them proactively follow up their files with financial institutions.
- Organize collaborative meetings between financial institutions with cooperatives, to discuss loan terms directly.
- Monitor and provide advice to producers on the judicious use of loans.

Anticipated result: Access to finance for agricultural inputs for maize improved; 200 million CFA mobilized by credible producer organizations.

MAIZE ACTIVITY CLUSTER 4: IMPROVING THE AGRICULTURAL AND TRADE ENVIRONMENT

4.1 Strengthen lines of coordination and organization.

To initiate discussions on the establishment of a stakeholder association for all actors in the maize value chain, IICEM will:

- Support the establishment of regional organizations in Sikasso and Koulikoro (during the first year).
- Train delegates on the details of the Law on Orientation of Agriculture (LOA) and relevant decrees adopted, notably the decree on the labeling of agricultural products.

Anticipated result: Representative organizations established for the regions of Sikasso and Koulikoro; steps taken by these organizations to establish stakeholder associations (interprofessions).

D. SOYBEAN

The soybean value chain is little developed in Mali. In the past, the CMDT used soy, among other crops, to diversify cotton production. Soy, however, offered few market outlets since cotton seed was the principle source of both edible oil and protein supplements for cattle feed.

The Value Chain Challenge

Reductions in the areas where cotton is grown—falling from 600,000 tons in its best year to less than 200,000 tons anticipated this year—creates strong demand for any product to replace cotton seed. Soy offers excellent potential, because of both the quality of the oil and the quality of soybean meal as a component of livestock feed. Given the collapse of cotton production, alternative products that provide edible oil and protein cake for cattle feed are in great demand. There is a growing market for these products. In the absence of alternatives, oil processing plants are currently importing from neighboring countries.

However, soy has had no support from IER in the past, except for a few tests carried out by the CMDT. No new improved variety has been tested in recent years. The proportion of oil in local varieties remains fairly low, at around 15 percent, while the varieties existing in Nigeria, Brazil, or the United States give proportions of oil of around 20 percent.

Soy can be an excellent source of cooking oil, which could lead to reductions in imports (of palm oil, for instance). It can also be a significant source of protein for animal feed, which could improve the feasibility and results of efforts to fatten cattle and could improve the animal feed industry in general. For these reasons, soy could help improve food security and generate income at several levels and could contribute to poverty reduction among farmers and animal producers.

Implementation Strategy

To develop this value chain and improve the incomes of soy producers, IICEM is collaborating with the Sud Agro Industrie Company (SUDAGRI-SARL). The partnership with this private sector enterprise aims to improve soy quality by introducing a high-performance seed variety from Brazil to foster medium-term

production of oil and soybean meal for the local market and for export. The intervention zone is Kadiolo, in the Sikasso region. The IICEM implementation strategy for developing this value chain will focus on:

- Extending areas where soy can be cultivated.
- Identifying volunteer producers motivated to grow soy.
- Introducing seed multiplication of the high performance variety.
- Supporting members of soy production cooperatives in following good agricultural practices.
- Packaging and marketing soy beans after harvesting.

Soybean is typically a short-cycle crop (somewhat like cow peas). Particularly in areas where rains come late, soy becomes a viable alternative speculation, as most other crops require more rain to reach maturity. If the maize produced in sensitive agro-climatic areas is affected by climate changes, soy could become a viable alternative crop and could contribute to income generation in response to climate change. As a legume crop, soy helps meet integrated soil management objectives. Also, in Burkina Faso and Nigeria it serves artisanal producers as an alternative source to *neré*/locust bean seed in the production of *soumbala*, a traditional condiment. Soy produces better quality oil and meal/cake than the cotton seed it would replace. Finally, soybean oil is a healthier alternative than many edible oils, particularly palm oil, and is recommended for patients with blood pressure or heart problems.

The following table sums up analysis of the demand for soy in Mali and shows potential IICEM interventions for the coming years.

TABLE 6: SOY DEMAND IN MALI AND PLANNED INTERVENTIONS

Market and Competitiveness	Challenges and Analysis of Needs	IICEM interventions
<ul style="list-style-type: none"> • Mali has a significant deficit of vegetable oils; soy provides a good source. • Soybean meal produces a better quality protein supplement for animal feed (compared to most other oil plant-based feeds). The poultry industry could be a source of significant demand. • SUDAGRI (in Sikasso) is constructing a milling plant to produce vegetable oil based on soy and jojoba. This plant, to be inaugurated in 2012, could constitute a significant source of demand for soy. 	<ul style="list-style-type: none"> • Demand for soy is not explicit because domestic supply is insignificant. • Most soy oil in Mali currently arrives in the form of food aid. • Soy production is minimal in Mali at the moment. Producers do not have experience of soy production, although there is a soy tradition in Burkina Faso and Nigeria. CMDT efforts did not lead to development of a strong value chain. • The Malian agricultural research and extension system has no program for soy that provides appropriate varieties and practices. 	<ul style="list-style-type: none"> • Facilitate arrangements for entrepreneur to visit soy processing and industrial production in Nigeria. Identify Nigerian varieties for similar agro-ecological areas. • Evaluate progress of efforts in seed multiplication and productivity, and look at preparations for commercial production. • Work with SUDAGRI and POs to scale up production activities. • Support, through IICEM's grant agreement with SUDAGRI, efforts aimed at multiplication of soy seed and training of local POs on practices for large-scale production.

SOY ACTIVITY CLUSTER I: IMPROVING MARKET ACCESS

In the medium term, the Sud Agro-Industrie Compagnie (SUDAGRI) SA Company envisages creating an oil and soybean meal/cake processing plant. Adequate supply for this unit will require 40,000 ha of *Jatropha* over four seasons of plantation and 30,000 ha of soy. At present, only 330 ha soybeans have been sown in 2010; as a result, all seed produced in 2010 (some 660 tons) will be used to sow other areas (a projected 5,000 ha in 2011) to increase soy production.

Producers of the 330 ha will serve as farmer seed producers for soy. SUDAGRI has committed to purchasing the entire production from partner producers, and will not, therefore, initiate processing or marketing activities in 2010.

1.1 Launch a study of the value chain.

The purposes of this activity will be to improve the value chain's level of competitiveness and confirm the strategic axes selected by the IICEM project. To do this, IICEM will:

- Set up an internal project team and recruit a local consultant who is a soy expert.
- Inventory and review recent literature on the value chain.
- Carry out surveys, interviews, and analysis of market productivity.

Anticipated result: A study of the soy value chain in Mali completed, providing a rapid overview and enabling a strategic orientation to be established for development of the soy value chain.

SOY ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

Within the framework of collaboration with SUDAGRI, IICEM will commit to building the organizational and institutional capacity of the cooperatives involved in soy production, while SUDAGRI will commit to purchasing inputs (seed and fertilizer), distributing fertilizer and phyto-sanitary products, and constructing storage sheds. The following activities will be undertaken:

2.1 Make producers aware of the potential of soy.

- Organize informational meetings for grassroots-level extension workers.
- Distribute information through local radio stations.
- Organize information and sensitization meetings in each of the rural communities.
- Develop an information and promotion guide for technical extension personnel.

2.2 Support the organization of a producer network/soy supply chain.

- Identify soy producers.
- Provide information for producers on the need to form groups.
- Facilitate the establishment of groups and cooperatives.
- Provide organization and leadership to help village cooperatives organize into a federation.

2.2 Provide technical support and build the capacity of soy producers.

- Establish a network of trainers.
- Develop teaching materials (technical references translated into simple technical guidelines that are clear and can be assimilated by the producers).
- Train the trainers (service providers, government extension services, etc.).
- Develop training modules on administrative management, financial management, production techniques, and marketing techniques.
- Train soy producers by presenting the modules.
- Provide support and advice to soy producers.
- Produce broadcasts and micro-programs on good production practices.
- Produce and disseminate training videos.

Anticipated results for activities 2.1, 2.2, and 2.3:

- Producer organizations trained (the establishment of groups and cooperatives facilitated).
- Organization and leadership facilitated for the first founding general assembly of cooperatives.
- Legal texts elaborated for the cooperatives supported).
- 20 tons of high-performance soy seed made available.
- 330 ha sown in June 2010.
- 660 tons of soy seed produced in 2010.
- Soy producers trained on the technical production plan.
- Yield sampling squares established and agricultural advice on soy provided by IER.
- Incomes improved for soy producers.

2.4 Contract with IER for agricultural monitoring of soy production.

IICEM will establish and sign a contract with the IER to ensure that the following tasks are carried out:

- Identify good practices concerning soy.
- Provide technical monitoring of plots installed.
- Evaluate yields using sampling squares.
- Evaluate the percentage of oil in the soy produced.

Anticipated results: Following the signature of the monitoring contract, IER will become familiar with soy in the Sikasso region and will report to the producers and IICEM on the results of the soy season.

E. POTATO

This year, IICEM plans to capitalize on and expand the project's earlier achievements, including consolidation and appropriation of those achievements by potato value chain stakeholders. After setting up a stakeholder association (*interprofession*), with support from IICEM, stakeholders are committed to agreement and collaboration to ensure the progress of the potato value chain in Mali.

The Value Chain Challenge

In the Sikasso region, potato production occupies more than 100 villages concentrated in a radius of 50 km from Sikasso. Potatoes generate more than 15 billion CFA in revenue, benefitting almost 50,000 households.

Potatoes do not keep well in a hot environment. Even with improved storehouses (ventilated, in adobe, using a system of wooden cases) conservation will not last beyond the month of July, the period of heavy rains. It is therefore not possible to consider keeping seed reliably for future seasons. Cold storage remains an alternative to consider, despite the high costs of electricity in Mali. Economic analysis is needed to evaluate the economic feasibility of production of seed in Mali. At the level of processing, there is still no procedure for processing (chips, for instance, which would enable longer-term storage). Finally, given the weight and the cost of transporting potatoes, prices obtained on the sub-regional markets are only competitive during a brief window of opportunity.

To sum up, major challenges remain if the potato value chain is to serve as a focal point for the project, namely:

- Modern equipment for conserving potatoes in the region is lacking, with negative effects on potato quality.
- An effective management mechanism is lacking for potato storage and conservation infrastructure.
- Potato inputs are high cost.

- Potato farms are small in size (the average size of farmers' fields varies between 0.25 and 1.00 ha).
- Actors' organizational and institutional management capacity is weak.

Strategy

In the long run, the potato value chain needs to figure out how to “beat the heat.” This is most obvious in terms of the need to reduce the cost of potato seed in order to improve returns from potato production. There are several national and regional activities aimed at potato seed production. IICEM should collaborate with IPR Katibougou, WASA, and other organizations seeking to find a local answer to resolve the high cost of importing potato seed.

To continue expanding potato production and potato producer revenues at a rapid pace, potato producers need to find alternative markets for large volumes of potatoes. The coastal urban centers are the obvious potential markets. A relationship with Shoprite Ghana should be explored carefully, because it would provide an opportunity to enter those coastal markets with a very strong, well-positioned partner. But that strong position also suggests that Shoprite would drive a hard bargain and the initial sales may not be very profitable.

IICEM must continue to strengthen the stakeholder association (*interprofession*) to improve the organization of potato production, financing, and marketing, and to make services available to value chain participants.

Potato, shallot, garlic, and other semi-perishable and relatively high-value horticultural crops are important elements of IICEM's strategy to improve returns from irrigation schemes and to provide income to both men and women. These horticultural crops provide off-season income for even those irrigation schemes that are relatively distant from urban centers, improving their feasibility and the livelihoods of participating farmers. In the south, potato production (by men) is integrated with women's rice production. In the north, where men mostly grow the rice, it would involve women in the production of the horticultural crops. Potatoes and other semi-perishable horticultural crops would thus make a significant contribution to food security and poverty reduction in the different regions, while also contributing to the long-term success of irrigation as a means of improving food security and adapting to climate change.

Implementation

Given the strong potential of the potato value chain, the IICEM project will pursue strategies that would enable producers to organize to sell in both national and sub-regional markets. To implement this strategy, IICEM will focus on:

- Consolidating national and sub-regional markets for potatoes.
- Setting up an efficient, sustainable mechanism to manage potato conservation warehouses.
- Improving production and productivity through access to higher-performing seed varieties.
- Installing demonstration fields for large-scale potato production.
- Building the institutional and organizational capacity of actors involved in the Malian potato stakeholder association.
- Collaborating with IPR Katibougou, WASA, IPM CRSP, and others to explore the development of a seed production unit.

The following table sums up analysis of the demand for potatoes in Mali, as well as the lines for IICEM interventions for upcoming years:

TABLE 7: POTATO DEMAND IN MALI AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • In 2009, potato sales in the sub-region fell. Improved storage infrastructure enables small farmers to prolong the marketing period to avoid dumping their production during the harvest and to increase sales prices by about 50 percent nationally. • During recent years, IICEM facilitated substantial sales at the sub-regional level, particularly in Abidjan. But in 2009, sub-regional market prices were not as attractive, due to increased domestic prices. • Mali still imports significant quantities of European potatoes during the dry season. • Shoprite Ghana showed interest in buying potatoes from Sikasso. 	<ul style="list-style-type: none"> • Although focused on domestic needs, Nigeria’s potato production is seven or eight times higher than Mali’s. Nigerian potatoes could be competitive in sub-regional markets. • Most potatoes are grown in small gardens (less than 1 ha), hand-watered from shallow wells. Yields of this small-scale production vary significantly and costs of production are relatively high. • Many producer groups still have difficulty accessing funding, because of prior problems that have led to poor credit ratings. • IICEM is currently testing wide-scale production (of 10 ha and more) that can be irrigated with motor pumps, increasing productivity at low cost. • IICEM has also introduced potatoes to women’s associations in Timbuktu and Gao. 	<ul style="list-style-type: none"> • Facilitate negotiations with Shoprite to purchase potatoes from Sikasso. • Maintain and broaden relations with other sub-regional purchasers. • Continue to provide technical assistance and support for access to finance to build and renovate potato storehouses, using wooden boxes and improved ventilation to prolong the marketing period. • Evaluate and explore alternative sources of seed potatoes. Assess whether Nigeria could be a low-cost alternative. • Evaluate the results of larger-scale potato production. If that succeeds, extend the activity with technical assistance and support for access to finance. • Evaluate the results and explore means to improve and enlarge potato production in the north as a source of diversified crops and income. Elements would probably include assessments of results from various producers, access to seed and inputs, improved practices, improved storage infrastructure, support for marketing, and access to finance.

POTATO ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

Targeted producer organizations envisage marketing 12,200 tons of fresh potatoes on national markets (compared with 10,172 tons in the second year of IICEM phase I)—a growth of about 20%. At the export level, the organizations envisage a volume of 2,800 tons compared with 2,375 tons in (the second year of IICEM phase I) for an increase of about 18 percent. To reach this objective, the project will implement the activities described below.

1.1 Build and equip improved community-based storehouses for potato conservation.

To strengthen available collective potato storage facilities, the following tasks will be carried out:

- Identify main production zones and choose beneficiary organizations.
- Sign an agreement between the apex potato producer organizations and beneficiary producers being supported by the apex organizations, to build storehouses.
- Develop terms of reference and estimated costs for building storehouses.
- Select local masons and carpenters to construct buildings and make storage crates.
- Provide the storehouses with one-ton scales to weigh potatoes.

Anticipated result: A total of 32 new community-based storehouses built, with storage capacity of 40 tons of fresh potatoes per warehouse.

1.2 Strengthen producer organizations' and potato traders' mastery of marketing techniques.

IICEM anticipates carrying out the following tasks to improve Mali's potato quality and strengthen the promotion of Malian potatoes:

- Train traders and producers in marketing techniques.
- Determine the amount of dry matter and pesticides needed for potato varieties in Mali, through biochemical analysis at the Central Veterinary and Food Technology Laboratory.
- Develop materials for public announcements on good practices for conserving and transporting potatoes, to be broadcast on Office de Radiodiffusion Télévision du Mali (ORTM) networks.

Anticipated results: A total of 200 potato traders and producers trained; five broadcasts of a publicity spot aired, aimed at the general population, highlighting improvements in potato quality and the nutritional qualities of Malian potatoes.

1.3 Consolidate group sales by strengthening marketing committees' technical capacity.

To improve marketing committees' ability to implement better marketing strategies (aimed at securing loan reimbursements and collecting capital funding for their organizations), the following IICEM tasks are anticipated:

- Train committees on the management information system (MIS) for cooperative societies, including loan management.
- Provide training on techniques for calculating the cost of goods sold in relation to the establishment of sales prices and creating and presenting profit and loss statements and balance sheets.
- Organize commercial meetings between wholesale traders, Bamako semi-wholesalers, and the Sikasso and Kati producers.

Anticipated results: Training completed for 300 members of the 20 established committees previously set up by IICEM during phase I; establishment of 32 new committees. Through these committees, producer organizations will be able to make better returns on the 12,200 tons of potatoes sold on the national market, selling at more competitive prices with more secure income and using a well-formulated budget.

1.4 Facilitate the establishment of a participative management mechanism for the 32 potato storehouses.

To facilitate appropriate use of the new storehouses and reinforce producers' use of new management techniques, it is anticipated that IICEM will:

- Facilitate the signature of an agreement between the Agricultural Collective Interest Company (SICA) and the basic-level cooperatives for storehouses use.
- Officially inaugurate the new storehouses in the presence of regional authorities.
- Make new crates for the storehouses, to increase their storage capacity.
- Train beneficiary cooperatives' management committees on the general information and management system, including stock management.
- Train management committees on creating and presenting profit and loss statements and balance sheets.

Anticipated results: Storage and conservation of over 600 tons of fresh potatoes for consumption; recovery by SICA of the agreed reimbursement (60 percent of the net result) for about 10 million CFA; over 200 administrators of cooperative management bodies trained.

POTATO ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

Organizations of men and women potato producers aim to produce 16,000 tons of potatoes, compared to 13,800 tons last year, for a growth rate of over 15 percent. IICEM will support this production goal by implementing the following activities.

2.1 Facilitate producers' access to quality inputs (seed and specific fertilizers) to increase production and productivity, in order to attain production objectives.

To do this, the project will implement the following tasks:

- Train producers on respecting the dosage of specific fertilizers.
- Facilitate meetings between input suppliers and producers, to reach agreements.
- Train the board of administrators on negotiating techniques so they can obtain inputs at competitive prices.
- Train the administrative board to consolidate requests, to better structure seed deliveries and specific fertilizers for potatoes.
- Officially launch the season for potato production.
- Provide training on good practices for potato harvesting and transport.

Anticipated result: A total of 372 tons of seed and 372 tons of specific fertilizers secured by 850 producers in 33 basic level cooperatives (to plant approximately 745 ha); 250 individuals trained in two sessions held in collaboration with cooperative committees, leading to the adoption of best agricultural practices by 850 producers.

2.3 Introduce new technologies for potato production on large fields in Sikasso to increase yields

To encourage producers to comply with best practices for plowing and plant populations, and to determine the yield and production costs, IICEM will evaluate test areas installed on 25 ha belonging to the villages of Karamogodiassa (10 ha), the Kouroumasso cooperative (10 ha), and the Finkolo Ganadougou women's group (5 ha). To implement this activity, the IICEM project will:

- Evaluate the yields of test areas.
- Organize farmers' visits to share the results of techniques promoted, with media coverage.
- Participate in funding inputs to set up 10 individual fields of at least 5 ha per individual in Sikasso.

Anticipated result: Yields increased (as a result of the tests carried out) from 20 to 25 tons per hectare.

2.4 Conduct a demonstration test of good practices for potato production and for development of the crop by women.

To consolidate positive achievements in the north and to carry out extension work of good practices in new zones such as Kati and Sélingué, IICEM will implement the following tasks:

- Provide technical assistance to previously existing women's organizations in the north, through regional GIEs and NGOs.
- Conduct tests/demonstrations for 15 women's organizations in the regions of Timbuktu, Gao, and Mopti, and for four women's organizations and mixed organizations in the Sélingué region, with project participation in the costs of acquiring fertilizer and seed.

- Fund the purchase of wire fencing and small motor pumps for watering, to expand or establish five vegetable gardens for women in the north.
- Ensure signature of an agreement on diversification of agricultural production in the zone covered by the Office for Rural Development of Sélingué (ODRS).
- Train producers in the northern regions and Sélingué, as well as the ODRS agents, on procedures for group acquisition of seed potatoes.

Anticipated results: More consolidated efforts to benefit potato production in the north of Mali; more than 350 producers and supervisory agents in the north and in Sélingué trained on the process of acquiring seed and on good practices for potato production, enabling them to acquire seed potatoes under the same conditions as their counterparts in Sikasso (e.g., quality, price).

2.5 Support the IPR/IFRA laboratory in Katibougou for local production of seed potatoes to establish a basis for national production of improved seed potatoes.

To do this, the project will:

- Sign an agreement with the Rural Polytechnic Institute for Training and Applied Research (IPR/IFRA).
- Evaluate, in accordance with a business plan from the Integrated Pest Management (IPM) Collaborative Research Support Program (CRSP), the relevance of funding the acquisition of greenhouses to increase capacity for the production of young plants.
- Fund air conditioners and conservation crates for potatoes, in accordance with the business plan, to increase the laboratory's seed potato storage capacity.
- Support the establishment of a model for seed potato production at Borko in the Mopti region, where several IER studies indicate that the conditions necessary for the production of high-quality seed exist.
- Support IPR/IFRA in the development of certification standards adapted to Malian conditions, in order to assure seed quality.
- Identify and encourage investors interested in potato seed production to take part in the transfer of technology to the private sector, which should ensure the sustainability of potato seed production.

Anticipated result: Continuation of IPR/IFRA laboratory tests; improved knowledge about the technical and financial feasibility of a seed potato production unit in Mali.

2.5 Introduce IPM technology for production and conservation of potatoes in order to improve production and storage technologies.

To carry this out, the project will:

- Collaborate with the IPM CRSP to implement the study of a national strategy for local seed production.
- Fund installation of training fields for IPM techniques in the Sikasso region.
- Conduct extension work (with cooperatives that have benefited from IICEM project storehouses) on good practices for potato storage and conservation.
- Analyze the technical and economic profitability of storehouses that have been built by an IPR/IFRA trainee.

Anticipated result: New technology for potato production and storage introduced in project zones.

POTATO ACTIVITY CLUSTER 3: IMPROVING FINANCIAL SERVICES

To attain production and marketing objectives, the IICEM project will support potato producer organizations in mobilizing 550 million CFA from the National Bank for Agricultural Development, known as BNDA (Banque Nationale de Développement Agricole), with support from both the project guarantee funds and supplier credits. The following activities are anticipated.

3.1 Facilitate producer access to finance for agricultural inputs.

The project will implement the following specific tasks:

- Negotiate loan conditions with the BNDA by the head of guarantee funds.
- Draw up funding requests and monitor application files with the BNDA.
- Organize collaboration meetings between producers and the InterAgro supplier.

Anticipated result: Around 550 million CFA mobilized for purchase of seed potatoes and fertilizer.

3.3 Strengthen producers' technical capacities in credit management to improve the security of input loans.

The following tasks are anticipated:

- Train administrative board members in establishing tools for credit management.
- Initiate administrative board members in establishing and presenting financial tools (profit and loss statements and balance sheets).

Anticipated results: A total of 300 members of the administrative board of old and new SICA organizations trained; a reimbursement rate of more than 95 percent for the loans.

POTATO ACTIVITY CLUSTER 4: IMPROVING THE AGRICULTURAL AND TRADE ENVIRONMENT

4.1 Strengthen the organizational and institutional skills of SICA.

The objective will be to develop SICA into a Sikasso regional union of potato producers, following the Malian Law on Orientation of Agriculture (LOA) guidelines relating to stakeholder associations. The following tasks are priorities:

- Revisit the associations' by-laws to convert them into cooperative societies.
- Set up commune-based unions for the five communes in which SICA operates.
- Revisit SICA's by-laws in order to convert it into a regional union.
- Train basic-level cooperatives on cooperative law and management.

Anticipated results: SICA transformed into an umbrella organization at the service of potato producers in the Sikasso region, in accordance with the LOA; five commune-based unions established; more than 800 members of 33 cooperatives trained on cooperative law and management.

4.2 Strengthen links for coordination and consultation, to help the potato stakeholder association become more dynamic in providing services to value chain actors and to better equip the stakeholder association to negotiate and sign an umbrella agreement with the government.

IICEM will implement the following specific tasks:

- Support the stakeholder organization in developing an operational action plan.
- Train delegates on the content of the LOA and the enabling legislation that has been adopted, notably the decree on labeling agricultural products.

- Train delegates on the development of activity reports and balance sheets.
- Train delegates on advocacy and leadership for change.

Anticipated result: A total of 39 delegates trained to mark the way toward signature of a framework for agreement between the government and the stakeholder association.

F. MANGO

During the third year of working with the mango value chain, the project will concentrate on i) promoting added value by building the capacities of mango processors, ii) pursuing efforts to seek international commercial partners for the dried mango market, and iii) assisting a new factory that will process fresh mango as pulp for export. The project will support certified organic producers of dried mango, as well as producers selected by the program to supply the new unit for pulp.

The Value Chain Challenge

Several constraints and major challenges remain for the mango value chain, including difficulties increasing fresh mango exports to Europe (which is still in the initial stages), promoters' limited ability to increase dried mango production capacity, and—more generally—the very low level of mango processing.

Fresh fruit exports offer high value added, but only three out of the 80 varieties of mango existing in Mali are exported, and only the best fruit are purchased. This does not enable producers to maximize their income, since 90 percent of their fruit fails to find a market. The establishment of a processing factory will enable a large number of growers to help create an entire surrounding industry, in particular developing new, improved orchards.

Strategy

Mango plays an important role in food security and poverty reduction as an alternative source of income, particularly in the south, but also in the Koulikoro region. Mangos are also a good source of carotenoids, vitamins A, B, C, and E, and several minerals, and are available to a large part of the population, making an important contribution to improving nutrition, particularly child nutrition.

IICEM's commercial orientation in the mango value chain focuses on processing, particularly on the creation of a new business—Coopérative Malienne de Fruits (COMAFRUIT) SA—that will, from its very first year, seek to purchase 20,000 tons of mango in Mali. This is on average twice, if not three times, the quantity of mango exported in recent years. IICEM will support the business in its difficult task of collecting the necessary tonnage, a first in Mali, with five trucks per day, six days per week, during 10 weeks). The arrival of a factory with the long-term objective of processing 40,000 tons of mango a year provides a unique opportunity for Mali—an actor that will at last enable the mango sector to take off. In the long term, and on its own, the factory will purchase more than three times the current quantity sold in the whole of Mali.

In addition, through the Strategic Activities Fund (SAF), the project will support the creation of a fruit juice factory in the Sikasso region with a capacity of 5,000 tons of mango. To improve the odds of its success, the project will support the start-up of this factory.

Mango is the only fruit tree crop covered by the IICEM project. These fruit trees make a contribution to several aspects of natural resource management: reducing localized erosion, contributing to water retention in the soil, recycling nutrients deep in the earth, and storing carbon. For these reasons, mango production offers another means of adapting to climate change.

Implementation

In this third year of work in the mango value chain, the project will follow the strategy initiated in year two, a strategy oriented toward the added value of processed products. On one hand, IICEM has initiated and supported joint action by four dried mango plants to fill orders from the European market. Support for the sector will continue to resolve certain bottlenecks and explore diversification to serve national and

international markets. On the other hand, the project will support the new pulp factory by helping organize producers to ensure that a steady supply feeds the factory. The project will support the juice factory in the same way.

Through this strategy of promoting added value, the mango value chain will contribute to increasing rural farmers' incomes and thus reducing food insecurity and poverty for families in the Sikasso and Koulikoro regions. The strategy may have a significant impact on foreign exchange and improve income for thousands of producers; it is vital to these added-value enterprises that their factories develop healthy partnerships with producers. Too often, companies do not survive the difficulties of the first year because they are unable to master the supply chain.

The following table summarizes demand for Malian mango pulp, and presents possible IICEM interventions for the coming years.

TABLE 8: MANGO PULP DEMAND AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • The EU is the principal market. Mali has the good fortune to be competitive because transport costs are much lower than those of India, the world's largest producer. • A comparison of prices in Mali and India show that Malian primary material is 50% cheaper. 	<ul style="list-style-type: none"> • Infrastructure for pulp processing costs a minimum of \$500,000; thus there are few investors who can satisfy bank capital requirements for a personal contribution of at least 20 percent. • The EU market is smaller than that of the Gulf States or North America, but there are indications that it could increase rapidly. 	<ul style="list-style-type: none"> • Support the two processors in line to receive SAF funding under IICEM with technical assistance and quality control measures. • Support and supervise selected producer organizations in supplying mango to the COMAFRUIT factory. • Strengthen relations with EU agents and buyers through delegations and trade fairs. • Explore commercial opportunities in the sub-region.

MANGO ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

Through its organizations of supported producers, the project aims to market about 13,000 tons of mango, compared to 11,000 tons in 2008/09, a growth rate of 18 percent. Marketing of dried mango will grow from less than 10 tons to over 30 tons this year. To reach this objective, the project will carry out the following activities.

1.1 Carry out a rapid study of specific niche markets in Europe for dried mango, mango dehydrated by osmosis, and mango pulp.

IICEM is targeting activities related to processed mango products. Some private sector Malian mango processors already have purchasers in the European market, but they are seldom aware of alternatives or of the scope and requirements of the market. In order to better understand this market, IICEM will:

- Recruit an international mango expert consultant.
- Carry out a rapid survey of the specialized European markets for mango products.

Anticipated results: Focused market studies completed that characterize the various mango products, the qualities that are sought, the volumes in question, pricing levels, the types of buyers, and the spaces for distribution. Eventually, this will enable private sector actors to diversify their clientele and ensure that product quality responds to market needs.

1.2 Facilitate installation of the supply system at the level of the pulp factory.

The many actions undertaken by USAID projects (Centre Agro Entreprise [CAE], TradeMali, Développement de la Haute Vallée [DHV], and IICEM I) in the past have led to in-depth knowledge of mango production zones in Mali. A pulp factory with the purchase capacity of 20,000 tons will be unable to carry out its first year successfully without IICEM support, given its knowledge of producers. The project will support COMAFRUIT in organizing a system of mango collection with communal weighing points. COMAFRUIT trucks will then collect supplies at these weighing points. This system will require precise knowledge of the zones, the potential of each zone, and the period when mangoes reach maturity in each zone. The following tasks will be implemented:

- Coordinate planning that takes into account the four production zones covering the 10 communes identified.
- Identify, organize, and share salary costs (with the factory) of four supervisory technicians.
- Provide advisory services from mango experts to ensure mango collection.

Anticipated results: Increased income for thousands of small mango orchard owners; facilitation of delivery of 10 tons of ripe mango per day for COMAFRUIT (by five trucks during the four months of the mango season); transfer of the project's skills and of the supply system set up at the factory, for future years.

1.3 Renew Éco-Cert organic certification and add 200 new certificates.

For the first time in Mali, dried mango has officially crossed national and sub-regional borders, thanks to the certificates obtained. Certification is vitally important in relation to international markets. The project will undertake the following tasks:

- Update the appropriate documentation required for certification.
- Provide advisory services to ensure that processing units respect norms for organic standards.
- Share costs of Eco-Cert certification with the major buyer, Gebana Afrique.

Anticipated results: EU and USDA certificates renewed for the four drying units and the 100 mango producers. To sustain the certification, IICEM is working on scaling up the volume sold internationally, with the target of exporting a minimum of 100 tons to build profits that will sustainably cover the certification cost. This will be possible in two years.

1.4 Support the Mali Circle of dried mango processors in building a warehouse for quality control of dried mango.

At processing level, products are often exported three months after drying. To avoid potential deterioration during storage, they need to be stored under appropriate conditions. To facilitate quality control and adequate storage of dried mango, IICEM will develop a grant agreement for joint implementation of the following tasks:

- Facilitate agreement by Mali Circle members on the site to build the center, purchase of the land, and on building.
- Produce pallets for storing mango.
- Provide scales to weigh the mango.
- Install electronic fly-catching apparatus.
- Make metal trays, scissors, and knives available.
- Help provide the required deposit to the gas supplier, Total.

Anticipate result: A center for control, packaging, and storage constructed by the end of this activity, enabling the processors' center to export 20 tons of dried mangos to the client, Gebana.

1.5 Conduct quality testing on top-of-the line packaging.

Current packaging, obtained from within the sub-region, is usable primarily for the local market. It is not usable for export markets because it allows air to escape, leading to deterioration of color and odor after one or two months, and it increased chewiness as moisture escapes. In order to find a solution to this problem, the project will undertake the following tasks:

- Identify a supplier of quality packaging that would enable exports of quality products.
- Set up a system of packaging, in direct coordination with the processors' association.
- Establish a written agreement for reimbursement of the project's financial support for purchase of packaging.

Anticipated result: Appropriate packaging available to enable processing and conservation of dried mango during a fairly long period without deterioration of the products.

MANGO ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

As a next step in USAID's assistance to the mango sector, the project proposes to work with 17 producer organizations in the regions of Koulikoro, Bamako, and Sikasso, supporting a total of around 2,800 mango producers on a total area of 3,700 hectares. The project expects yields in these areas of 6 to 7 tons per hectare, for overall production of over 26,000 tons. This level of production will be reached by implementing the following specific activities.

2.1 Assist the Sélingué mango cooperatives (Compabas) in setting up a village supply system.

Harvesting and collecting fresh mangoes remains the principal issue related to mango supply. To ensure correct operations of the COMAFRUIT pulp factory machines, the company will need to obtain over 20 tons of mangos every day during the four months of the season. To achieve this, about two truckloads of 10 tons each will be needed, requiring a hundred harvest workers. Compabas is a key partner in COMAFRUIT's supply chain, but it is not presently organized well enough to uphold its end of the partnership (by providing such quantities consistently over an extended period of time). IICEM's role will be to essentially help Compabas become an effective supplier and partner in the supply chain. The following tasks will support the establishment of this supply system:

- Conduct 10 sensitization sessions on requirements for and establishment of an adequate supply system.
- Identify the producers and harvest workers that will ensure the harvest.
- Train selected producers and harvest workers to participate in the factory program.

Anticipated result: At least 20 mango producers trained in each of the 10 communes covered by the cooperative, for an approximate total of 200 producers trained. By the end of the season, these producers and harvest workers will master the system of harvesting and collecting fresh mangoes for the pulp factory. Based on the quality of the mango pulp and on the interest of international clients, COMAFRUIT will have to invest next season in warehouse zones, mango crates, special peeling equipment, and more to assume full control over his supply chain. IICEM will continue to work at the producer level, helping producers better deliver quality products to this new and important client. The planned investment by COMAFRUIT in improving the supply chain and the increased capacity of Compabas producers to be effective suppliers will allow IICEM to withdraw from the facilitation role.

MANGO ACTIVITY CLUSTER 3: IMPROVING FINANCIAL SERVICES

This year, the project will focus on financing mango processing. This is important because, to add value to the quantities of mangoes on the national market in July and August, a significant amount of mango must be dried within a short window. A system will have to be set up to facilitate processors' access to finance, even

in the absence of formal orders. It should be noted that the local market has proven capable of absorbing dried mangoes even without having a formal ordering system.

The IICEM project will primarily support processors by providing 10 million CFA as a revolving fund during the season and covering the cost of plastic packaging for dried mango. To achieve these financial objectives, the project will carry out the following activities.

3.1 Facilitate access to revolving funds for drying units.

The project has already set up relations with micro-finance institutions and various banks to facilitate access to finance for processing equipment. The project will encourage the mango drying units and carry out the following tasks with partner financial institutions:

- Provide support in obtaining firm contracts, whenever possible, to ensure annual production of dried mango and reduce risks for the financial institutions.
- Help develop the documentation required for funding requests.
- Evaluate requests for funding from the revolving fund established for the dried mango processing units.

Anticipated result: Funding provided for four dried mango processing units in the regions of Sikasso and Koulikoro, for a total of up to 10 million CFA. The project's loan guarantee fund will be used to support the fund.

MANGO ACTIVITY CLUSTER 4: IMPROVING THE AGRICULTURAL AND TRADE ENVIRONMENT

4.1 Engage in advocacy and lobbying to improve Mali's business environment, to attract major agricultural investments.

Throughout its various activities to promote agribusiness, IICEM has heard from individual investors that, although they see Mali's potential, there are too many impediments to business start-up and operation. IICEM will work with the Agence pour la Promotion des Investissements au Mali (API-Mali) to raise the awareness of public authorities—especially those within the Ministry of Economy, Trade, and Industry (MEIC)—about the following obstacles:

- There are no incentives to purchase land (which exist in many other countries).
- There are no incentives to create jobs (which exist in many other countries).
- There are no incentives for industrialization and for the introduction of advanced technologies (which exist in many other countries).
- It is difficult to operationalize the various agreements related to the investment code.
- Finance rates are too high: 8 to 9 percent in Mali compared to 2 to 3 percent in Europe.

To begin to address these issues, IICEM will conduct the following tasks with API-Mali:

- Brainstorm with MEIC representatives on conditions favorable to large-scale investment.
- Establish a list of possible government actions to improve conditions for large-scale investment.
- Submit the working group's proposed measures to the Minister and Prime Minister.

Anticipated results: Improved awareness within the government of possible solutions for attracting and retaining significant agricultural investments; initiation of improvements in the agricultural and trade environment.

G. SHALLOT

In the shallot value chain, the IICEM project intervenes primarily in two regions: the Dogon Plateau in Mopti and Lake Horo in the Timbuktu Region.

The Value Chain Challenge

Income generated by the shallot value chain plays an essential role in food security and family survival in the production zones in the Dogon Plateau and Lake Horo. There are, however, enormous constraints to the achievement of the potential for shallot growing, including difficulties with production, conservation, processing, and marketing. These multiple problems include the following:

- Value chain actors are not organized. During the various studies (market studies, diagnostic/institutional studies of producer organizations) and meetings conducted during the first year of IICEM phase I, it was evident that actors in the value chain do not have an appropriate space for exchange and collaboration. In year two of IICEM phase I, the project's efforts to restructure the local Union des Producteurs et Transformateurs de l'Eschalote (ULTPE) for the Dogon Plateau facilitated collaboration between the various actors. To carry out its tasks successfully, however, this new union needs advisory services and financial support.
- It is difficult to identify adequate supplies of seed and there is no revolving fund for producers to obtain seed in a timely manner at the start of the season.
- Sale of harvests at the high point of production is stagnant: marketing concentrates first on fresh products that arrive almost at the same time in the different production zones.
- The dried shallots produced traditionally have a reputation for low quality. Recently, Dogon women won first prize for the quality of processed products at the agricultural production fair in Ouagadougou, Burkina Faso. This is a first step and efforts should be maintained.

Implementation Strategy

To ensure better quality production, which is needed to establish top-of-the-range products for traders and consumers, IICEM technical services will provide support and advice to the producers to do the following: promote the improved seed produced by IER; encourage utilization of special formula fertilizer rather than urea, particularly with regard to shallots intended for conservation; continue support for group sales; promote improved storage huts; and build the institutional capacity of the Unions of Bandiagara and Lake Horo.

Shallots are a crop with high potential for value added and relatively high productivity. With pressure on land, given population growth in the area around Bandiagara, the majority of women grow three shallot crops per year. Since each family possesses only a small plot of land, significant earnings associated with shallot growing make an important contribution to income, family living conditions, food security, and poverty reduction.

SHALLOT ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

Through the 12 producer organizations supported on the Dogon Plateau and the six supported at Lake Horo, IICEM aims to market about 4,000 tons of shallots (compared with 3,453 tons in 2008/09). This will include 1,815 tons on the Plateau and 1,638 tons at Lake Horo, for a growth of 16 percent. To achieve this objective, the project will carry out the following activities.

1.1 Monitor the promotion of group sales and improve capacity to negotiate with wholesaler purchasers, enabling quicker sales and better sales prices.

To do this, marketing committees have been installed at each of the 10 cooperatives. These committees have enabled the various cooperatives to improve sale prices in comparison to previous years. These committees need training to more fully master the new system. For this, the project will:

- Train members of the organizations' cooperative and union committees to form shallot producer networks that will generate significant stocks for future purchasers. IICEM will train members on i) strategies and mechanisms for group marketing of agricultural produce; ii) establishing and maintaining stock management documents; and iii) establishing and presenting activity reports and balance sheets.
- Monitor marketing committee activities and establish relations between these committees and the union, to seek out markets.
- Establish annual operations accounts for all the marketing committees and the committees for management of the grinding equipment used in the production of chopped, dried shallots.

Anticipated results: A network to which the committees belong, which includes the committees and the union; stocks established as a basis for marketing; and relationships developed between the committees and sub-regional and local traders.

1.2 Develop exports of quality shallots on sub-regional markets.

In the first year, IICEM carried out research in the sub-region (Siguiri and Kankan markets in Guinea and Abidjan in Côte d'Ivoire) that identified quality problems. Foreign clients found various faults with Malian shallots (poor processing, immature bulbs, inadequate grading, etc.). It is therefore necessary to combine the establishment of business relationships with greater attention to quality. The project will:

- Train the wholesale traders selected by the organizations of shallot producers to market their produce and provide quality shallots to meet the demands of the sub-regional market. The training will concentrate on grading, processing, respecting sales contracts, and gathering commercial information.
- Facilitate establishment of commercial relations between Malian traders and sub-regional operators.

Anticipated result: The development of export-quality shallots, which favors the growth of sales in sub-regional markets.

1.3 Monitor sub-regional exports from the Bamako market.

To improve knowledge about purchasers, where they come from, and the prices being paid, a sentinel needs to be established on the Bamako market. To do this, the project will:

- Establish a contract to monitor the Bamako market with the Malian Government's Agricultural Market Observatory (OMA) from February through June 2010.
- Hold a workshop to report on the results to UPLTE cooperative members.

Anticipated result: Better knowledge of the sub-regional export market, enabling ULPTE to initiate a strategy for direct wholesaling with purchasers, in order to increase profitability and diversify markets in the following years.

1.4 Construct and equip seven improved storehouses (for traders) and seven conservation rooms (for cooperatives).

Each storehouse or conservation room will be equipped with crushers, motorized carts, and scales in order to reinforce capacity for conservation and storage by target cooperatives and traders. The motorized carts will serve for internal transport of women's cooperatives produce to the storehouses, which are often more than 20 km away. The following tasks will be carried out:

- Identify and select beneficiary cooperatives and traders.
- Ensure signature of agreements with the beneficiary cooperatives and traders.

- Construct infrastructure (with substantial participation from the population) and purchase equipment.
- Train cooperative members and traders to use crushing machinery.
- Hold ceremony for handover of the conservation rooms and the storehouses.

Anticipated result: Construction of seven new conservation rooms (for the cooperatives) equipped for conservation of 15 tons of fresh shallots, and seven new storehouses (for the traders) equipped for conservation of 40 tons of processed products (five on the Dogon Plateau and two at Lake Horo).

SHALLOT ACTIVITY CLUSTER 2: IMPROVE PRODUCTIVITY

IICEM's target is production of 4,500 tons in 2009/10, compared with 3,815 tons in 2008/09 (a growth of 18 percent) by 12 organizations of men and women producers on the Dogon Plateau (ten old and two new, including Konsogou Do in the Commune of Dourou and Boro in the Commune of Soroly) and six at Lake Horo (four old and two new). This production will be achieved through the following activities.

2.1 Encourage establishment of commercial relations with the smallholder seed producers of Niono to ensure the best possible yields.

To access high-quality seed, the project will:

- Organize producers for group purchases of seed.
- Orient producers toward local seed suppliers and, if needed, toward traders in Niono supplying seed with the support of IER.

Anticipated result: Better quality seed used by a few producers in each supported village, establishing commercial relations that will continue during subsequent seasons and ensure improved seed each year.

2.2 Introduce a new variety selected by IER on the Dogon Plateau.

Unlike work on the Dogon Plateau, in Niono IER has improved productivity by making available to producers selected seeds that produce well and have bigger bulbs that are appreciated by the market. To introduce a new variety on the Dogon Plateau, the project will:

- Plant test plots in 54 villages, with two producers per village.
- Ensure that these plots are monitored by IER/Mopti and the partner NGO.

Anticipated result: An improved variety introduced in tests in five villages on the Dogon Plateau.

2.3 Introduce shallots in two IVPs in Timbuktu and two IVPs in Gao.

Some of the IVPs with which IICEM works grow only rice. In order to diversify crops and ensure increased revenue for producers, there is a strong demand by producers to introduce shallot growing. To do this, IICEM will:

- Identify sites and producers in two IVPs in Timbuktu and two IVP in Gao.
- Provide support in acquiring inputs.
- Train producers.
- Set up and monitor plots.

Anticipated result: Production diversified through the introduction of shallots in four IVPs in northern Mali.

2.4 Carry out extension work with the women producers of the Irrigated Perimeter Organization of Baguineda (OPIB) on technologies for drying shallots.

To develop conservation techniques for shallots and other horticultural products, IICEM will:

- Identify the actors involved.
- Facilitate establishment of the logistics by OPIB.
- Organize a study tour for OPIB producers to visit shallot producers on the Dogon Plateau.

Anticipated result: OPIB producers will learn shallot conservation and drying techniques that have proved to be successful with Dogon Plateau producers.

2.5 Introduce the rainy season onion variety at OPIB, ODRS, on the Dogon Plateau, and in Timbuktu, in partnership with WASA and ATP and selectively with IER.

The advantage of this new variety is that it can be produced during the rainy season, which would enable diversification of the production period and provide an income source throughout the year. To do this, IICEM will undertake the following tasks:

- Identify sites and producers.
- Develop an agreement with the Regional Center for Agronomic Research (CRRA) in Mopti and Gao.
- Train producers.
- Set up and monitor plots.
- Organize a farmer field day to expose test results to as many people as possible.
- Organize a study trip to Burkina Faso to learn from experiences there.

Anticipated result: Production diversified through introduction of rainy season onions in four production basins.

2.6 Conduct a study on rehabilitation of 10 shallot perimeters.

To improve water retention and soil management, studies will be undertaken to evaluate the potential costs and benefits of rehabilitating infrastructure serving areas cultivated by collaborating villages. To do this, the project will:

- Review the work needed to rehabilitate shallot perimeters in Anakanda, Konsogoudo, Golgou Sinkarma, Diondoulou, Yawakanda, Soningue, Wolo Wolo, Kokodiougou, and Dandoli.
- Report on the results of the review and discuss using a labor intensive (community) approach to undertake the rehabilitation work.

Anticipated result: A study enabling cost-benefit evaluation of rehabilitation.

SHALLOT ACTIVITY CLUSTER 3: IMPROVING FINANCIAL SERVICES

To achieve objectives for production, agricultural productivity, and marketing, the IICEM project will help farmer organizations obtain 25 million CFA in financing.

3.1 Facilitate cooperatives' access to finance for inputs (with the BNDA for financing Dogon Plateau cooperative inputs).

The project will carry out the following specific tasks:

- Strengthen producer organizations' ability to prepare dossiers for funding requests.
- Facilitate seed loans.
- Facilitate loans for processing and marketing.

- Provide advisory services and follow-up for producers, to help ensure judicious use and repayment of loans.

Anticipated result: Financing (up to 15 million CFA for seed and 10 million CFA for processing) to enable over 80 percent of project-supported cooperatives on the Dogon Plateau to receive one of the two types of credit.

SHALLOT ACTIVITY CLUSTER 4: IMPROVING THE AGRICULTURAL AND TRADE ENVIRONMENT

To encourage the emergence of second-tier organizations (cooperative unions) that can defend their interests with the government, the IICEM project will work to improve the agricultural environment by conducting the activity below.

4.1 Strengthen the organizational capacity of the Shallot Producers Union of the Dogon Plateau

After receiving support from an international consultant to create a strategic development plan, the Union will benefit from the following efforts of IICEM:

- Support the first annual assembly and the presentation of the strategic development plan.
- Collaborate with other technical and financial partners—principally the U.N. Food and Agriculture Organization (FAO), the Project for Competitiveness and Agricultural Diversification in Mali (PCDA), and an Italian project which operates in the area—to share the principal activities of the development plan.
- Cost-share the cost of employing an executive secretary and an accountant within the Union. IICEM's contributions will progressively decline until the Union is self-sufficient.

Anticipated result: A union established with the capacity to initiate activities and structure itself to become a representative and lobbying force in support of marketing products labeled *Plateau Dogon*.

H. TOMATO

In the first year of IICEM phase I, the project concentrated tomato value chain improvement activities on the Baguinéda zone, with supervision from the Irrigated Perimeter Organization of Baguinéda (OPIB). In year two, the project extended these activities into the Selingué area, supervised by ODRS. During this third year, the project intends to reinforce and wind down its activities.

The Value Chain Challenge

The Baguinéda area, covering 22 villages, is an historical production area for tomatoes. It is a favorable zone for production and marketing of agricultural produce in general. Among these products, tomato takes pride of place and constitutes the producers' most important source of income. However, the promotion of the tomato value chain is still confronted by difficulties, such as the following:

- The fairly high cost of inputs (seed and fertilizers) make pre-financing difficult.
- Low off-season supply and saturation of the markets during harvest periods leads to reduced income.
- There is weak value addition of the product, due to the lack of modern structures for transformation and conservation (a tomato paste factory or units for drying tomato).
- Productivity is low due to whitefly disease (wilt virus). In Baguinéda, the disease is now controlled following actions undertaken by IICEM in years one and two. ODRS actions to control the disease started in 2009 and need to be followed up.

- Post-harvest losses are fairly high.
- Following the year two test, there is not yet a consistent pattern of purchasing seed that is tolerant and resistant to the virus, nor is there a network of quality seed suppliers in place.

Tomato production is an important source of income, and thus a focal point for food security and poverty reduction for a significant number of people in specific areas in Mali (Baguineda, Sélingué, Kati, and ON). The fresh tomato market in Mali is important and profitable, but largely saturated during the main harvest season (December to April). Few tomatoes are available from May through November. Tomato production in this agro-ecological zone typically takes place in the cold season, requires irrigation, and produces yields that are low by international standards. Tomatoes are subject to serious pest and disease attack, which is part of the reason they are not produced in the rainy season. Overall, tomato production is high cost by international standards.

In order to expand, the Malian tomato value chain needs to find additional markets. Without refrigeration, it is impractical to transport fresh tomatoes long distances to coastal markets. The cost of refrigeration and proper conditioning would make Malian fresh tomatoes non-competitive in those markets. Importing and producing packaging materials, particularly classic tomato paste cans, is very expensive. Given the combination of expensive tomatoes and packaging, tomato paste produced in Mali is not presently competitive in sub-regional markets, and has not even been competitive with Italian tomato paste in the Malian market. COMAFRUIT is considering producing some form of tomato paste/sauce. The company is apparently considering packaging this sauce in small plastic or paper containers that would be much less expensive than the classic tomato paste cans. COMAFRUIT is preparing a market study with the hope that this new packaging technology may provide the means to compete with Italian tomato paste. It is stimulated to find commodities (in addition to mango) to process because it needs to keep its factory operating throughout a longer period of the year in order to achieve a return on its investment.

There is a small market in Europe for dried tomatoes, but such products only meet the standards of developed country markets if they are produced in a closed process to keep them clean and hygienic. A factory with a closed processing system would require a very significant investment and would have trouble being price competitive, given the low yields and relatively high cost of tomatoes produced in Mali.

Like other fruits and vegetables, tomato makes a contribution to a more balanced diet. If they were more readily available throughout the year, they would make a contribution to improving nutrition.

Implementation Strategy

The value chain approach remains the strategic orientation for IICEM tomato activities. It encourages interaction by the various agricultural stakeholders involved to meet market demand. To reduce the constraints cited, after the success of establishing Integrated Pest Management (IPM), activities should be followed carefully to ensure that the private sector takes responsibility for making improved (tolerant) seed available. To do that, the IICEM project will focus on:

- Setting up a program with the operators for supply and distribution of seed, in order to ensure availability of seed for producers (envisaged through a partnership with the WASA project network of private distributors).
- Carrying out advocacy for exemption from value added tax (VAT) on imported seeds.
- Pursuing the “host-free period” technique begun by ODRS.
- Encouraging intervention by IPM CRSP.

TOMATO ACTIVITY CLUSTER I: IMPROVING PRODUCTIVITY

1.1 Provide disease-tolerant seed varieties.

IICEM introduced varieties that are tolerant and resistant to the virus. Although the producers appreciated the seeds, they were considered very expensive. To make these seeds more readily available, sources of supply need to be diversified so that these products can be more widely distributed in the various zones. To do this, the project will carry out the following tasks:

- Purchase tolerant and resistant seeds (Heinz, Campbell, Nadira, or Jaguar).
- Test additional tolerant varieties (Nadira or Jaguar, which are cheaper and easier to source) in partnership with the Technisem company at OPIB and the ODRS.
- Identify seed distributors in the tomato production basins and establish protocols for collaboration.

Anticipated result: Tolerant seeds available in the intervention zones of IICEM and its partners. Eventual understanding by distributors of the commercial advantage of tolerant seeds; promotion and purchase of these seeds directly from suppliers.

2.2 Promote the “host-free period” technique in the Sélingué zone.

In July and August 2009, the 22 ODRS villages began to apply the host-free period (HFP) technique, with IICEM support. The following tasks will be undertaken in 2010:

- Strengthen training of the brigades that monitor and enforce the eradication of potential host plants in the 22 villages.
- Carry out the campaign for sensitization and information in all 22 villages.
- Monitor and report on HFP results.

Anticipated result: Increased awareness of the host-free period technique, with effective participation by over 90 percent of the farmers in the 22 target villages.

I. GARLIC

There is exponential growth in demand for garlic in many consumer markets, particularly in Europe. This European demand for garlic offers an opportunity for producers in Mali, particularly rural women, to develop this crop in order to diversify sources of income. Garlic and other horticultural produce could contribute significantly to the income of men and women producers during the off-season, while at the same time increasing the profitability of infrastructure (e.g., investments in water retention techniques in low-lying areas in the Sikasso region). Semi-perishable horticultural products (garlic, onions, and potatoes) can be produced in sites some distance from urban centers because they can be transported more easily over longer distances.

The Value Chain Challenge

In April 2009, French garlic importers made a prospecting trip to Mali to see and analyze the conditions for production and export of garlic from Mali. The climatic and edaphic (soil) conditions offer enormous potential for Mali to become a top-class garlic producer and exporter. However, challenges remain, particularly the following:

- There is little knowledge of quality requirements in European markets.
- The garlic varieties produced in Mali are unsuitable for the requirements of the European market.
- There is limited knowledge of good practices for quality garlic production.
- Yields are low for garlic produced in Mali.

To reverse this situation, IICEM will collaborate with the French company Les Jardins du Midi and two Malian private operators (AOM and IB Négoce) to experiment with garlic growing for export. The objective will be to reduce constraints in order to make Mali a garlic producing and exporting country.

Implementation Strategy

Given the interest of French importers in importing garlic produced in Mali, the project will improve garlic production and marketing conditions in Mali in general, and more specifically for women’s groups. To achieve this objective, the project will:

Introduce more profitable new varieties that are appreciated on the markets, by conducting demonstration tests in collaboration with agricultural research in Mali, French partners, and private operators (AOM and IB Négoce).

Provide technical capacity-building opportunities for men and women on best practices for garlic production, harvesting, and processing.

The following table provides a brief analysis of demand for garlic in Mali and summarizes IICEM interventions for the coming years.

TABLE 9: GARLIC DEMAND IN MALI AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • Mali imports significant quantities of garlic, thus there is a substantial national market. • The French company Jardins du Midi has expressed a desire to import garlic from Mali to supply a seasonal gap in its supply chain. • Dried garlic can be stored without problems once it is dry, and it can last a long time. 	<ul style="list-style-type: none"> • The varieties for hot climatic zones are limited, but some are good quality and popular among producers. • This is a new crop for Mali but, as with onions, Niger is the first producer in the sub-region. 	<ul style="list-style-type: none"> • Explore European markets, particularly possibilities with the French garlic importer Jardins du Midi. • Call for recommendations concerning varieties to cultivate—particularly those with good market demand, as well as knowledge of practices for cultivation, storage, and marketing—from Jardins du Midi or other European importers • Visit garlic producers in Niger. Learn about the successful varieties cultivated, practices for cultivation and storage, and sub-regional markets. • Identify the entrepreneurs and producer associations who wish to invest in commercial production of garlic.

GARLIC ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

1.1 Test production, productivity, and adherence to specifications for harvesting and processing.

The following specific tasks will be carried out:

- Train male and female producers in harvesting and processing techniques for export.
- Establish and share quality specifications with producers.
- Carry out a market study (by an individual, firm, or a specialized partner) on world supply and demand for garlic products, covering issues such as the following: identification of world producers, various strata of demand, the most highly valued varieties, the evolution of prices, market growth, and identification of purchasers (producer-processors, wholesalers, distributors, etc.). The goal will be to better understand specifications for garlic and the structure of world prices.

- Establish an agreement for collaboration between producers, exporters, and the French client (based on the results of the test and the market study) to market garlic produced in a win-win partnership, in order to extend the areas from 2010 to 2011.
- Organize a trip to Jardins du Midi, following the establishment of an agreement, to better understand garlic production and marketing conditions in France.

Anticipated results: Establishment of a partnership for garlic production and marketing between the Malians and the French, in order to develop garlic exports.

GARLIC ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

2.1 Introduce new varieties of garlic and conduct variety trials.

The project and its partners (Jardins du Midi, IB Négocce, and AOM) aim to introduce new varieties of garlic through variety tests on two hectares in two distinct sites: one hectare in Sikasso (Finkolo Ganadougou) and one hectare in the Upper Niger Valley Authority (OHVN) zone. To do this, IICEM will:

- Monitor testing of seven garlic varieties on one hectare by the women of Finkolo Ganadougou and one hectare in the OHVN zone.
- Sign a contract with IER for monitoring and providing a cost analysis of the results of the variety trials and for production of a final report.

Anticipated results: Knowledge of the characteristics of growing Eurasian varieties of garlic in Africa. Possible extension of the partnership on a wider scale, in the event that garlic bulbs are formed; proposal and testing of other varieties if these bulbs do not produce.

J. TIGER NUT

Tiger nut, also known as *pois sucré* and *chufa*, is cultivated in three West African countries: Mali, Burkina Faso, and Niger. In Mali, it is grown only in the Sikasso and Kadiolo districts. Traditionally, production and marketing of tiger nut has been strictly a women's activity. Strong demand on the external market (in Spain, Ghana, Liberia, Burkina Faso, and Senegal) and the profitability of this market, combined with the fall in cotton income, has encouraged men to launch themselves into tiger nut production. Men's involvement in production has increased the area cultivated, introduced the use of animal traction in production, led to mineral fertilizer application, resulted in a considerable increase in yield per hectare, and stimulated the grouping of producers into cooperative societies.

The Value Chain Challenge

Currently tiger nut production contributes to incomes and food security and reduces poverty among more than 5,000 farmers in over 72 villages. More than 67 percent of these farmers are women (UCPPS 2007). Studies have shown that national marketing and exports of tiger nuts generate an annual total of around 500 million CFA in direct revenue to producers. Despite this economic significance and its enormous potential value, the tiger nut value chain faces significant difficulties in Mali, notably:

- Current yields are low in comparison with neighboring countries.
- Production costs are uncontrolled.
- Prices for the producers are low.
- Levels of organization surrounding the product are low.
- Harvesting equipment is inadequate and storage infrastructure is absent.
- Technical support for actors in the value chain is weak.

To address these constraints, the IICEM project will work with the union of tiger nut producers at Farakala and Arouna Konaté, as well as with the tiger nut exporter, to facilitate a more dynamic collaboration between these two essential stakeholders in the chain and to enable Malian tiger nuts to be competitive on the Spanish and sub-regional markets.

Implementation Strategy

Last year, the exporter was able to purchase almost 500 tons of tiger nuts. This year, his goal is 800 tons, but he is concerned about product quality. Good quality is necessary for success on the European markets. IICEM will work directly with the union of tiger nut producers and the exporter in order to improve the yield and quality. Income generated by the producers makes a direct contribution to supporting food security for the 5,000 families involved. IICEM will:

- Train producers on improving tiger nut production and on delivery to the exporter.
- Increase production and productivity through diffusion of appropriate fertilizer techniques.
- Improve storage and conservation conditions for tiger nuts in the production zones.
- Facilitate value chain actors' access to finance.
- Build producers' technical, organizational, and institutional capacities.

The following table provides a brief analysis of demand for tiger nuts in Mali and summarizes IICEM interventions for the following years:

TABLE 10: TIGER NUT DEMAND IN MALI AND PLANNED INTERVENTIONS

Markets and Competitiveness	Challenges and Analysis of Needs	IICEM Interventions
<ul style="list-style-type: none"> • In 2009, Mali exported more than 500 tons of tiger nuts to Spain. • International market demand for tiger nuts is increasing exponentially. Countries in the sub-region such as Burkina Faso and Liberia also show marked demand for tiger nuts. • The exporter Arouna Konaté has signed a purchase contract with the producers' union for 800 tons of tiger nut for the 2009/10 season, in order to fill orders for the Spanish market. 	<ul style="list-style-type: none"> • Although it is concentrated in the Sikasso district, production is marked by low yields (3.0 to 3.5 tons/ha) in comparison with production in Niger (which reaches over 7.0 tons/ha and could compete with Malian tiger nuts). • Use of rudimentary harvesting techniques makes this operation arduous for tiger nut producers and also reduces the quality of tiger nuts delivered to the exporter. • Producers receive a low purchase price for tiger nuts, in part because they lack collective storage equipment and over 70 percent of production is marketed individually. • The cooperative society does not function well (there is no truly cooperative vision). 	<ul style="list-style-type: none"> • Support implementation of the contract between the exporter and the Farakala cooperative union of tiger nut producers. • Provide technical assistance for the proper functioning of cooperative societies, and assist producers to access adequate financing for production inputs. • Encourage tiger nut quality improvements through rehabilitation and construction of storehouses, which reduce the development of mold that is the cause of aflatoxin on the nuts. • Assist the exporter to access bank financing (supported by the project guarantee fund), to enable him to pay for tiger nuts delivered by the producers.

TIGER NUT ACTIVITY CLUSTER 1: IMPROVING ACCESS TO MARKETS

In order to promote tiger nuts, the project will emphasize improving the quality of tiger nuts produced and delivered by the producers to the exporter. The anticipated result is the export of 800 tons of tiger nuts to the Spanish market.

1.1. Survey the tiger nut market.

IICEM will reach out to the Spanish tiger nut syndicate to understand more about the specifications and best conditions for product purchases. With this data, the project will follow through with production improvement measures, specifically through the following tasks:

- Discuss contacts and clients with the Malian exporter.
- Evaluate the relevance of entering into direct contracts to avoid intermediaries.
- Establish an action plan to improve the quality of the product delivered to the market.

Anticipated results: Improved knowledge of the needs of the Spanish syndicate and of direct business conditions with them; export of tiger nuts to the Spanish market without hindrance or barriers.

1.1 Strengthen post-harvest storage, handling, and packaging to combat development of fungi that secrete aflatoxins.

IICEM will conduct the following tasks with the cooperatives:

- Train producers on good practices for drying tiger nuts.
- Advise on setting up a system of traceability for the various products, from purchasing tiger nut seed to marketing the harvests.
- Help establish a quality-control committee for tiger nut exports.
- Prepare and disseminate tiger nut quality guidelines.

Anticipated result: Over 300 producers (60 percent women) trained to dry the product properly using European buyer norms.

1.2 Support establishment of logistics to ensure access to a quality-focused market.

Through its innovation fund, IICEM will:

- Rehabilitate/build five 150-ton capacity storehouses in the main centers of tiger nut production.
- Participate in the purchase price of 10 sorting machines to grade/sort tiger nuts.

Anticipated result: A logistical infrastructure established to support export quality and volume and enable significant growth in volume over the next two years.

TIGER NUT ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

To increase production, the project will work to increase tiger nut per-hectare yields. To do this, IICEM will bring direct technical assistance to the producers through agricultural advisers who will be at their disposal. The partner NGO will provide support for 460 hectares, for a production of 1,400 tons. To this end, IICEM will pursue the following activities.

2.1 Facilitate producer access to inputs.

To enable producers to access quality inputs at more competitive prices, the following specific tasks will be carried out:

- Train producers on specific fertilizer requirements for tiger nuts in Mali (type, dosage, and application techniques).
- Facilitate written contracts between the exporter and producer organizations.
- Train farmers on the process of group purchases of agricultural inputs.

Anticipated results: Access to inputs for producers covering an area of 460 hectares, after setting up business relations with a financial institution; wholesale negotiations with the suppliers of inputs; involvement by the exporter.

2.2. Disseminate good practices for tiger nut production.

To raise tiger nut yields, IICEM will ensure that production best practices are more broadly understood. To this, the project will:

- Install demonstration/test plots to show integrated management (fertilizing and technical itinerary).
- Train producers to understand and determine production costs.
- Organize smallholder farmer open houses to visit and see the results of the test plots.
- Establish an agreement with the Food Technologies Laboratory for tiger nut quality analysis.

Anticipated result: Producers supported to produce around 1,400 tons of quality tiger nuts. 100 tons of organic, quality tiger nuts will be produced in the 2010/11 agricultural season.

TIGER NUT ACTIVITY CLUSTER 3: IMPROVING FINANCIAL SERVICES

3.1 Facilitate access to finance.

To reach production and marketing objectives, IICEM will facilitate access to finance by producers and the exporter for the tiger nut value chain. IICEM will:

- Build producers' financial management capacity.
- Establish the documentation required to request input credits from financial institutions and provide advisory services and follow-up.

Anticipated result: Mobilization of around 75 million CFA for production and marketing of tiger nuts; over 540 producers (50 percent women) trained.

K. OTHER HORTICULTURAL PRODUCE

Horticulture plays an important role in increasing incomes among smallholder producers. It is particularly important in providing an alternative source and improved seasonal distribution of income with rice irrigation schemes. Such income may allow families to keep more of their rice production to meet family food needs and still meet other obligations. Horticultural production is often left to women, providing them with an important source of income. The opportunity to produce crops and income in two seasons helps improve returns on the investment in irrigation infrastructure, and helps minimize risks related to climate change. Furthermore, we know that children in Mali still suffer from various forms of malnutrition. Increasing the availability of and access to vegetable products will make a contribution towards improved nutrition.

For horticultural products, peri-urban vegetable plots are limited in terms of space by the intense pressure of urbanization in Malian towns. Plots that are continuously exploited without rotation or fallow periods are rapidly worn out under the weight of overuse, so yields fall. Climate change and poor natural resource management have led to environmental degradation, which is one of the main contributors to food insecurity. Intervention efforts must harmoniously combine horticultural production and sustainable management so peri-urban gardening is diversified and respects the environment. A project for horticultural

diversification is important not only to reduce the pressure from pests by breaking their cycles, but also to improve the nutritional quality of the products consumed. It will also increase producers' incomes so that both physically and economically they can access food in adequate quantities, as well as food of good quality that can support healthy, active, and productive lives.

Failure to master good production practices—particularly the use of high-quality seed, pest management, and management of natural resources—and failure to respond to market information will limit the potential production of horticultural producers. To reverse this tendency and to make horticulture a source of income generation for producers, the IICEM project envisages developing production and marketing of any horticultural product for which the market seems promising.

Implementation Strategy

Given Mali's potential in horticultural production, IICEM will emphasize the development of horticulture in program perimeters and developed low-lying areas. To achieve this objective, IICEM and its partners will focus on:

- Introducing new vegetable garden crops, particularly to benefit women, in existing project zones.
- Ensuring support for women and producers to help them master good production practices in a healthy environment.
- Introducing into the habits of men and women producers in peri-urban areas sustainable production techniques that will enable efficient water use and improved soil conservation (plant ground cover, green manure, associated crops, etc.).
- Assisting women with product marketing.

HORTICULTURAL PRODUCE ACTIVITY CLUSTER I: IMPROVING ACCESS TO MARKETS

1.3 Identify produce desired by consumers in the area.

In order to facilitate the choice of crops to produce, IICEM will carry out a rapid survey to identify existing sales opportunities and possible changing trends in demand on the part of local consumers, in order to adapt local horticultural production. To do this, IICEM will:

- Carry out surveys of the national market, particularly emphasizing neighboring clients such as hotels, restaurants, and employees of local organizations and vegetable markets, in order to identify the need for various types of fresh horticultural produce.
- Study the vegetable import market and examine the possibility of replacing these markets.
- Carry out studies on the international market for products with good export possibilities.
- List consumer requirements for fresh vegetables.
- Train women and men producers on food safety and hygiene, as well as on good practices for production, harvesting, and packaging.
- Inform men and women producers about market needs and requirements.
- Promote advocacy and lobbying, which encourages the target clientele to support producer efforts by ensuring a stable market.
- Introduce, together with the Ministry of Tourism, the notion of ecotourism with restaurants and major hotel chains in Mali, to have them buy quality produce.

Anticipated result: Improved knowledge of national and international markets for the horticultural products appreciated by consumers, in order to help producers adapt production to market demand (with regard to the choice of crops and compliance with market requirements). Tests conducted to measure the

depth of these markets with men and women producers on large-scale areas (one or two hectares instead of individual small plots).

HORTICULTURAL PRODUCE ACTIVITY CLUSTER 2: IMPROVING PRODUCTIVITY

In order to increase productivity and female producers' incomes in supported vegetable market sites, IICEM will conduct the following activities.

2.1 Test vegetable production on a large scale.

IICEM aims to introduce at least five new horticultural crops that are identified as presenting interesting commercial opportunities in zones supported by the project. Potential crops targeted by the project include red and yellow bell peppers, various varieties of pimento peppers (including bird pepper), new varieties of *cucurbitaceae*, strawberries, grapes, red cabbages, broccoli, carrots, rainy-season tomatoes, cherry tomatoes, gherkins, and mushrooms. To do this, the project will:

- Fund the purchase of necessary seeds and fertilizers to install trials.
- Fund the purchase of small-scale watering equipment for women.
- Install demonstration plots with women's groups in Sikasso (including Sélingué).
- Train women on good practices for horticultural production.
- Train on organic, sustainable, and ecologically friendly agriculture.
- Initiate producers in techniques of organic and sustainable production.
- Provide training on notions of branding, traceability, food safety, and hygiene, to satisfy a new type of clientele concerned with health and the environment.
- Train producers in advocacy and lobbying.

Anticipated result: Implementation of broad-scale tests of quality products and successful marketing of these products, enabling female and male producers to organize their vegetable production more efficiently and ensure their markets.

2.2 Support urban and peri-urban vegetable gardeners in Bamako.

To improve market garden producers' incomes in the ACI 2000 area of Bamako and other regional capitals, IICEM will first support producers in the vicinity of the IICEM offices. The following tasks will be conducted:

- Fund purchase of seeds and fertilizer necessary for installation of tests.
- Fund purchase of small-scale watering equipment for male and female producers.
- Install demonstration plots in the gardens.
- Train men and women producers in good practices for horticultural production.
- Train in organic production and sustainable, ecological agriculture.
- Assist with organizing and planning production.
- Provide communications assistance (identifying communication supports for better knowledge of these new services).
- Initiate producers in techniques of organic and sustainable production.
- Provide training on the ideas of branding, traceability, food safety, and hygiene, to satisfy a new type of clientele concerned about health and the environment.
- Train producers in advocacy and lobbying.

Anticipated results: Demonstration gardens established for other gardeners in the ACI 2000 area and other regional capitals in Mali (Sikasso, Mopti, Kayes) that are capable of serving a demanding clientele with diversified products of high quality. Establishment of a new type of producer-clientele service; organization

and planning of production and sales in a way that ensures adherence to quality and quantity commitments to clients.

OTHER VALUE CHAINS

IICEM is seeking to accelerate economic growth. To this end, every opportunity for rapid growth associated with mastery of a national, sub-regional, or international market could lead to a partnership within the framework of IICEM activities. Partnerships with businesses that impact thousands of smallholder producers will be given priority. IICEM has, for example, undertaken contacts on partnerships of this type in the sesame value chain and the groundnut value chain.

II. FISH FARMING

The third most important economic activity in Mali, following agriculture and livestock, fishing occupies an important place in the country's economy. Since the 1970s, fish production has been declining in the Central Niger Delta, the country's principal production zone, following endemic drought that significantly reduced the area under water. Production has fallen from 87,000 tons in 1970 to 37,000 tons in 1985, before stabilizing at 45,000 tons in 1990. Contrary to this fall in production, the need for protein is increasing steadily with marked demographic growth. This has led to strong pressure on an inadequate natural resource, making this popular protein inaccessible for the majority of Malians.

The challenges facing the development of fish farming can be summarized as follows:

- There is a permanent and significant deficiency of low-cost water.
- There is an insufficient supply of young fish (fry), with only one breeding center existing (at Molodo).
- There are not enough personnel with good technical mastery of fish farming.
- There is a lack of feed mills specializing in producing fish food.

To meet these challenges, IICEM plans to integrate fish farming into the system of agricultural production, in order to strengthen both the fish farming and rice growing value chains.

Strategy

Fish are in high demand in Mali and, like other sources of meat, are quite expensive. Where the soil has enough clay content to hold water, a small area devoted to fish ponds may produce as much revenue as a much larger field of rice. If farmers have a pump, it costs very little extra to fill the ponds with water while irrigating the rice. In addition to providing an important additional source of protein to meet nutritional needs, the fish may also provide a very important source of income, contributing to both food security and poverty reduction.

In some cases where there is gravity flow irrigation and the cost of water is relatively low, it may be possible to grow fish in canals or in certain parts of a plain, especially if some areas are relatively low and water gets a bit deeper than elsewhere. Fish typically need a minimum of 50 centimeters (cm). Obtaining such quantities of water is only practical where gravity flow irrigation provides a relatively cheap source of water.

Implementation

The implementation strategy envisioned by IICEM focuses on:

- Ensuring rational management of water and space through rice/fish farming (the fish benefit from the infrastructure and water used for rice growing) and raising fish in floating cages.

- Improving rice and fish production and productivity by recycling fish wastes and the remains of feed that is not consumed as a substitute for mineral fertilizer.
- Diversifying men and women producers' sources of income.
- Protecting the environment by recycling animal waste (organic manure, remains from abattoirs, etc.).
- Providing another source of natural feed for fish (parasites, insect larvae, insects, and worms living in rice-growing areas), leading to a reduction in water-borne diseases.
- Strengthening actors' technical capacity.

Planned Activities

- Review reports, market studies, and the feasibility of fish farming in Bamako, Ségou, Sikasso, Morila and Mopti.
- Assess the sector and establish contacts with the producers of young fish and fish in ponds.
- Acquire inputs (agricultural and industrial products, fertilizers and small-scale equipment) for training and introduction of new fish-farming spaces.
- Train technical supervisors, NGOs, and male and female producers in fish/rice farming, in partnership with the Aqua CRSP, through training sessions and visits to exchange experiences.
- Introduce new spaces for fish farming and rice/fish farming.
- Study the soil and physical-chemical characteristics of water at the Morila mine site to evaluate the possibility of introducing a system of integrated production (fish farming, poultry, small livestock, and vegetable gardening).
- Monitor fish production at Kouakourou Lake in the Mopti region and at Finkolo Ganadougou dam, to identify the species that migrate there naturally, assess possibilities for support to improve the productivity of these bodies of water and assess the possibility of supplying young fish from these points.

Anticipated Results

- Basic data on fish farming available.
- Partnership relations established with the producers of young fish and fish in ponds.
- Initial training of actors ensured; visits to exchange experiences carried out.
- The first rice/fish farming and fish farming activities carried out.
- Suitable sites for development of fish farming in the regions of Mopti and Sikasso identified.
- Data available on production of fish and species of fish in Kouakourou Lake in the Mopti region and of the Finkolo Ganadougou dam.

NATURAL RESOURCES MANAGEMENT, BIODIVERSITY, AND CLIMATE CHANGE

Efforts relating to natural resource management (NRM) and improvement of biodiversity are intrinsically linked to the efforts needed to control and adapt to climate change. Several of the approaches used for NRM and conservation of biodiversity call for the management of trees/forests, with the inherent possibility of capturing carbon. Maintaining forests and other ecosystems also benefits biodiversity and helps mitigate the impacts of climate change. IICEM natural resource management objectives include biodiversity protection and mitigation of and adaptation to climate change.

The major problem in natural resource management in Mali is the control of access to resources by the various users. This has led the government of Mali to adopt a new policy based on involving neighboring populations in the surveillance and exploitation of natural resources. The development and implementation of local agreements is a part of this national policy of empowering local populations for the control and sustainable use of natural resources. The IICEM strategy will be based on an integrated development plan for protected areas and areas surrounding protected areas, to arrive at a sustainable landscape approach. Preserving and restoring the habitat will enable threatened species to be safeguarded and will encourage the return of species that have disappeared from a particular zone (Cf. Results of the studies of flora and fauna in the various forests). The strategy for IICEM intervention will be based on the following:

- Helping facilitate a sustainable landscape approach for the complex of protected areas and registered forests in Bougouni-Yanfolila.
- Developing a Development and Management Plan (DMP) of the Toupéré and Samori forests, in collaboration with the Global Sustainable Tourism Alliance/Pays Dogon project (GSTA/PD).
- Establishing local agreements based on the approved DMP for the Toupéré and Samori forests.

TOPIC AREA I: MANAGING NATURAL RESOURCES

1.1 Establish and implement local agreements.

The objective of this activity is the creation, approval, and implementation of eight local agreements for local resource management. The resources subject to the agreement—depleted forests and sources of riverside forage plants—will vary from one region to another. From experience, an agreement only has a good chance of reaching its objectives if the idea is endogenous, that is to say emanating from the populations in the neighborhood of the resources in question. Therefore, during this project work planning period, each partner NGO or GIE will develop and finalize at least two agreements and monitor and evaluate the implementation of existing agreements.

1.2 Conduct training.

After approval of each agreement, the project will train members of the commune councils and the village surveillance brigades in the zones concerned on various subjects, such as relevant legislation and regulations and techniques for cutting wood and grafting.

Subsequently, at least 300 individuals will be trained through various modules and 100 commune counselors and other members of local communities will be trained in improved natural resource management. All members of the surveillance brigades and the customary authorities will benefit from this module, as well.

Other training modules (for example, wood cutting techniques) will be determined by the nature of resource use, subject to agreement.

1.3 Carry out biological fixation of sand dunes at Tondibi and Lake Horo.

IICEM has put considerable effort into mechanical fixation of 40 ha of sand dunes at Lake Horo (Timbuktu) and 3 ha at Tondibi (Gao). Technically, for greater effectiveness, mechanical and biological methods should be combined. Accordingly, biological fixation of the 43 ha of dunes will be carried out with species that are drought resistant (*Euphorbia*, *Balanites Egyptiaca*, or *Zèguènè*), based on the wishes of the local communities. This includes outplanting (e.g., 2,500 *Euphorbia* cuttings).

1.4 Carry out biological fixation of sand dunes at Gobi and Maritondi-Echell

Continuous encroachment by sand constitutes a serious threat to agricultural production on the Gobi IVP. A sand dune with a surface estimated at 10 hectares has formed between the village and the IVP rehabilitated by IICEM. In addition, a sand dune exists between Maritondi and Echell in the Lake Horo area. IICEM will undertake efforts to fix these dunes using mechanical and biological methods.

1.5 Support reforestation of the low-lying area between the villages of Maritondi and Echell (the dune to be stabilized at Lake Horo) and the IVP canal.

The surface of this area is estimated at around 200 ha. The choice of species to plant (*Eucalyptus*, *Acacia Sénégal*, *Prosopis*, etc.) will be made with the beneficiary groups.

1.6 Continue work to establish a greenbelt around the urban Commune of Diré.

In documents such as the Plan for Natural Resource Management (elaborated by PRODEPAM) and the Master Development Plan for the Urban Commune of Diré, provision is made for implementation of 30 km of green belt with a width of 100 meters. In past efforts, IICEM worked with nine women's groups and youth associations to cover 2 km with *Eucalyptus*, which has a survival rate of over 90 percent. To stabilize the sand dune more effectively, trees will be planted in the space between the dune and the perimeter canal. For implementation of the first part of the green belt around Diré, maintenance, surveillance, and exploitation will be ensured by targeted women's groups and an agreement will be established with each group. Because this experience was successful, IICEM will continue this year, covering a distance of 4 km.

1.7 Support biological protection of the banks of the Bani River at Touara.

The devastating effects of water erosion are evident on the banks of the Bani River at Touara (Djenné district). The force of waves of water provokes the disintegration of the banks, a phenomenon that is encouraged by the local topography. To solve the problem, the communities say that they have attempted several solutions without success, such as planting bourgou and trees (*Jatropha curcas* and mango). IICEM will test—either singularly or in combination—vetiver, *Acacia Kirkii*, and bamboo on 300 to 500 linear meters.

TOPIC AREA 2: CONSERVING BIODIVERSITY

2.1 Conduct ecological monitoring of registered forests and protected zones.

To keep abreast of ecological status and change from activities conducted by the project in registered forests and protected zones, IICEM will mobilize IER Sikasso to organize ecological monitoring activities.

2.2 Develop a master plan for the Sourou watershed.

Development of this planning and management document is critical for harmonious development of the basin. Because of the very high cost of this activity, the IICEM project envisages a partnership with World Vision for its implementation.

2.3 Facilitate formal delineation of the Bagoé registered forest.

Registration procedures contained in the law require formal delineation of the registered forest after the decree containing its registration is published. IICEM will therefore facilitate delineation of the real limits of the registered forest to clarify borders, which will improve future planning, protection, and enforcement measures.

2.4 Continue registration of the Bagoé gallery forest.

The River Bagoé crosses the districts of Kadiolo, Bougouni, Sikasso, and Kolondiéba (Sikasso region) on a length of 300 km. It covers 75 km in the Koulikoro region before joining the Baoulé and the Banifing in Dioïla district and then giving birth to the Bani. The portion of the forest in the Sikasso region is currently being registered. The fears that the political and administrative authorities anticipated before the start of registration of the Bagoé, although well founded, did not materialize—all 65 neighboring villages took part in the process voluntarily. As a result, the Water and Forestry Service asked for registration in one block of the portion running through the Koulikoro region, which will complete Bagoé protection measures. The activity will be implemented by a specialized consulting agency.

2.5 Develop a pastoral plan for the communes around the Bougouni-Yanfolila complex of registered forests and protected areas.

These large forested areas will soon be recognized as an animal reserve. This change of status will mean a total ban on the presence of cattle within the borders of the areas. However, since cattle are seasonally moved across the forest towards Côte d'Ivoire and Guinea, it is critical to identify a new cattle pathway through the development of the new pastoral plan. The plan will be a complementary document to the management plan currently being elaborated by AID-SA.

2.6 Establish a DMP and local agreements for the forests of Toupéré and Samori.

The socio-economic studies of the neighboring villages and the flora inventory have shown serious degradation of these resources and forests. The effects of this degradation have included wasteful exploitation, over-pasturing, tree-clearing for new fields, and even habitat fragmentation with the Toupéré forest. One of the recommendations of the workshop to validate these studies, held in September 2009, was to establish DMPs and local agreements to limit the various threats. A pastoral study must first be conducted, however, to determine the load that the forests can support and to identify pastoral routes.

IICEM will work in the Toupéré massif with the GSTA/PD project and in Samori with the IUCN, CARE, and CRS consortium. In case of challenges, IICEM will work with the forestry camps of Koro and Bankass, which will undertake community mobilization. This work will be preceded by reconnaissance and by delineation of the limits of the Toupéré and Samori massifs.

TOPIC AREA 3: FACING CLIMATE CHANGE

Ecosystems around the planet are at risk, particularly land ecosystems that provide subsistence for the majority of the population in West Africa. Demographic growth, changes in land use, degradation, rural poverty, and the impact of climate change all constitute growing threats to the livelihoods of rural populations, as well as to the natural environment. Communities that depend on agriculture and other forms of natural resource use are under increasing pressure. Mali has been living with the effects of periodic severe drought and the desert advancing southward for longer than global climate change has been recognized as a topic of international concern. It is now believed that this trend towards increased dryness and more erratic rainfall patterns across the Sahel is part of global climate change. Given these harmful effects on Mali's rural population and natural resources, IICEM is working to ensure sustainable economic growth, with an emphasis on adapting to climate change.

The agricultural research and extension system in Mali has been involved in breeding, testing, and disseminating shorter-cycle and more drought-tolerant varieties for many years. IICEM is promoting and helping scale up the use of such varieties throughout its target value chains, particularly rice, maize, millet, and sorghum. The technologies for upland crops proposed by INTSORMIL and other research organizations involve such varieties and other techniques to control soil and water erosion or engage in water harvesting. Promotion of upland rice is another means of trying to increase production and productivity from the regions that receive sufficient rainfall, and is also a partial measure for responding to the decline in cotton production. IICEM's irrigation activities are also a way to promote sustainable productivity increases and more efficient use of the limited water available in Mali, as well as to help adapt to the likelihood of decreasing water availability.

IICEM would like to expand efforts to adapt to climate change in conjunction with ongoing natural resource management and biodiversity activities. The initial target for this effort is the complex of registered forests and protected zones of Bougouni-Yanfolila, for which AID-SA has received a concession from the National Forest Service. The targeted concept is to develop a sustainable landscape or informal biosphere. IICEM has contributed to the completion of inventories of the fauna and flora; acquisition and first interpretation of general satellite images; marking of boundaries with a fire break 10 meters wide; and socio-economic studies of villages surrounding the forests. These basic studies have enabled AID-SA to develop, in cooperation with the communities, a draft DMP for the forestry complex. This plan, as well as a broader integrated management plan for the area around and including the protected areas, is currently being validated.

The DMP aims to reduce human pressure on the existing forest complex. It has two components: i) community-based conservation activities, and ii) alternative economic activities that would contribute to achieving food security in the area by diversifying and enhancing production systems in the communities surrounding the forest complex. Stimulating the sustainable development of the local economy will, in turn, contribute to the broader development of ecotourism infrastructure and services, as well as other diversified sectors. The alternative economic activities for surrounding communities emphasize crop diversification, increased yields per hectare, agroforestry (including shea and other local species), woodlots for fuel and timber needs, fisheries, and processing of agricultural and forest products for higher value cash crop income (including shea butter and jatropha oil). The forest conservation activities include demarcation, control and monitoring of resource extraction, ecotourism, sustainable hunting, and wildlife management.

A cattle trail that crosses the protected area has been in use for decades to drive cattle from Western Mali to the Côte d'Ivoire. Disputes between herders and local villages recently resulted in one or more deaths. IICEM will work with AID-SA and the local population to identify a route that circumnavigates the protected areas and is acceptable to both herders and local populations. To make using this trail practical, the trail will need to be marked with permanent markers and water points along the trail will need to be established or improved. IICEM plans to help AID-SA establish the trail and related conventions.

In the long run, there are opportunities for increasing sustainable agricultural production outside the protected area to help relieve human pressure on the protected area. Maize is an important crop in the area and there are significant opportunities for improving both upland and lowland rice production. In the future, IICEM will work with AID-SA to introduce improved varieties and improved production techniques, such as SRI, for this agro-climatic zone. IICEM will also help AID-SA strengthen the capacity of farmer cooperatives in the area and will assist them in developing storage and marketing strategies.

AID-SA would also like to pursue the idea of seeking carbon credits through the development of a Reducing Emissions from Deforestation and Degradation (REDD) project, to help support continued development of the integrated sustainable landscape approach over the long term. IICEM will continue discussions about such a REDD+ project and, if agreement can be reached among all relevant parties, IICEM will plan to help fund the inventories and other preparatory activities needed to identify whether a REDD+ project is feasible.

3.1 Support the finalization of the DMP for the registered forests and protected zones of Bougouni-Yanfolila.

It is mandatory for all activities carried out in these registered forests to be included in the DMP, a document validated by the national commission put in place by the National Directorate for Waters and Forests (DNEF). The draft of this plan was transmitted by AID-SA to the DNEF. IICEM will carry out the following tasks:

- Draw up and sign an agreement with the DNEF to support implementation of the plan and supervision of activities relating to it.
- Support the DNEF's internal validation of the plan.
- Support a workshop for all actors to validate the plan.

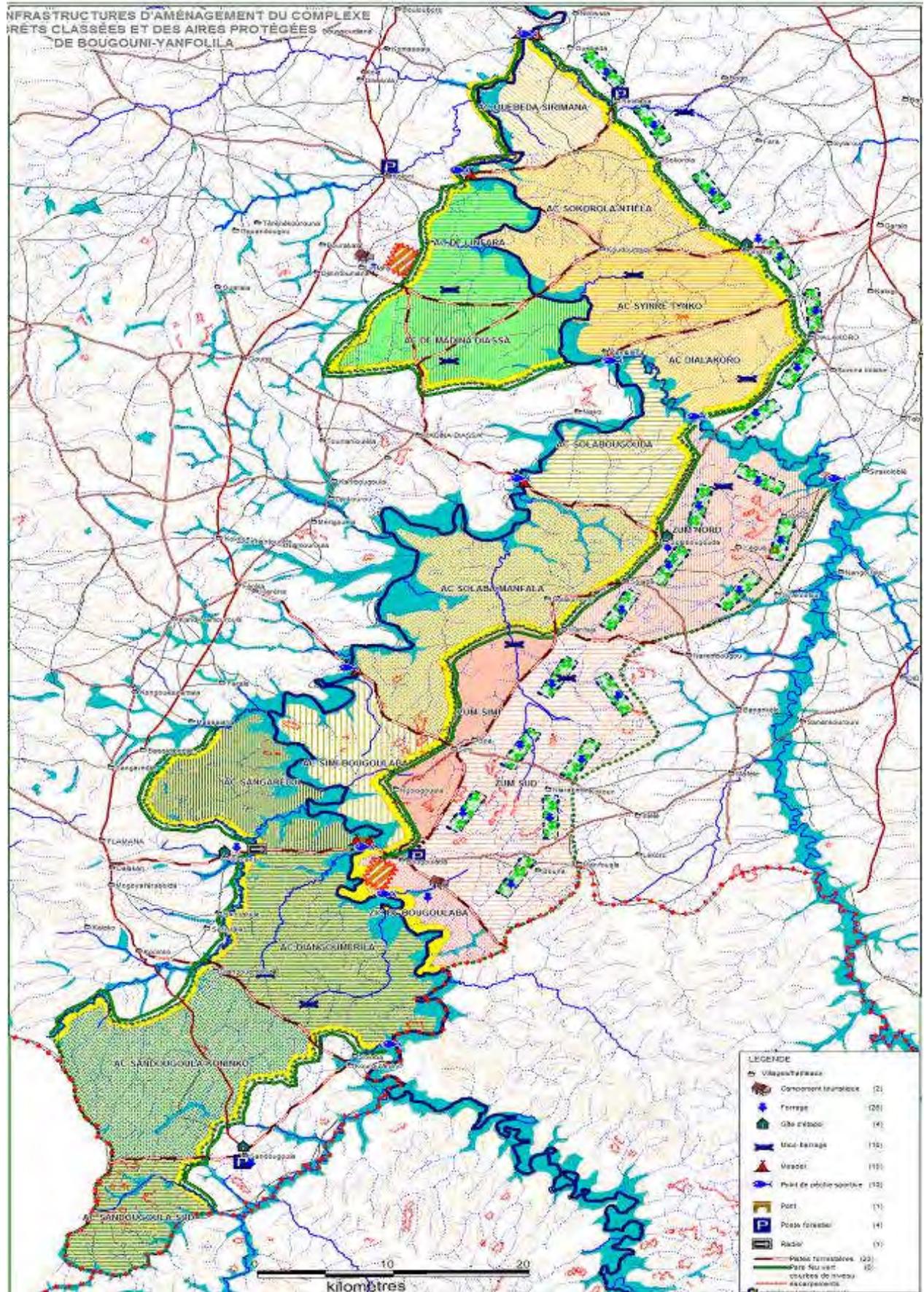
Anticipated results: The DMP for the registered forests and protected areas (as proposed to the government by the DNEF) enacted as a legal document by December 31 2010. (Legal adoption of the plan is foreseen in 2011 and implementation in 2012.) An agreement for collaboration drawn up and signed between IICEM and the DNEF for the plan.

3.2 Facilitate training on the basic concepts of climate change for the communities and representatives of state services that are regional actors in the DMP for the Bougouni-Yanfolila complex.

- Identify and bring together the actors by zone (for the three zones) to plan training sessions.
- Facilitate, together with DNEF and AID-SA, training sessions on climate change.

Anticipated result: More than 300 individuals, including both local community members and local representatives of state services, trained on global climate change and adaptation to climate change.

The next page shows the map of registered forests and protected zones of Bougouni-Yanfolila.



3.3 Analyze and understand USAID's Global Climate Change requirements with regard to vulnerability to climate change and climate change adaptation.

Building on existing IICEM activities—and using studies and other input from technical and financial partners, NGOs, and institutions related to local climate change—IICEM will follow the methodology of the USAID global climate change (GCC) manual, *Adapting to Climate Variability and Change*. This framework will allow IICEM to analyze vulnerabilities and explore potential climate change adaptation opportunities for IICEM target groups. This analysis is a prerequisite for programs funded by USAID GCC. It will involve the following tasks:

- Perform a brief vulnerability assessment to explore how climate change affects vulnerability or how climate change may undermine the integrity, efficiency, or sustainability of IICEM's activities and subsequent impact on communities.
- Conduct an analysis to examine the consequences of variability and understand how to incorporate activities that will reduce vulnerability.
- Conduct a meeting with key stakeholders to review the results of the analysis and provide recommendations to the IICEM project.
- Develop a plan for how new adaptation activities or modifications to existing activities can be integrated into IICEM implementation.

Anticipated result: A list of activities on adaptation to climate change established, which can be incorporated into IICEM's value chain and irrigation work. Ultimately, IICEM's program will be consistent with USAID's best practices for responding to global climate change.

3.4 Conduct a feasibility study and prepare a REDD+ project design document.

IICEM intends to undertake a feasibility study to analyze applicability of the REDD+ concept in the Malian context, prepare the first methodology for monitoring and evaluation, and elaborate the project design document for approval and registration with a recognized standard on the carbon market.

These steps are preconditions for creating carbon credits that can be sold on the international carbon market to fund long-term protection of forests by the communities, which would be done through a public-private partnership. More precisely, the study proposes to cover an area of 200,000 hectares of humid tropical forests in the southwest corner of the Sikasso region near the border with Guinea and Côte d'Ivoire. The first estimates show that between 60 and 70 percent of the total area of the forests is appropriate for a REDD+ project.

The AID-SA company has signed a 20-year concession contract with the DNEF, which started in 2008. The state consigns to AID-SA its management prerogatives, apart from forestry police. AID-SA commits to mobilizing human and financial resources by all available means, including self-financing and donor funding, for forest maintenance and for exploitation of non-timber forest products.

Important studies funded by IICEM have already contributed greatly to the design of the DMP and to obtaining preliminary data. Other complementary studies, such as evaluation of biomass and the rate of carbon that is fixed, will need to be undertaken by a company or consultancy that has achieved international recognition for its capacity to collect all the data needed to access carbon funding. IICEM and AID-SA will approach Terra Global Capital, a pioneer company in this domain. The following tasks will need to be carried out:

- Contract Terra Global Capital to complete the complementary studies (evaluation of the biomass, geo-referencing of samples in the forest, and establishing and validating the REDD+ project file).
- Contract national consultants to support Terra specialists in establishing the REDD+ project file.

- Make a grant to the AID-SA company, and to DNEF if necessary, for organizing and monitoring all the necessary preparatory activities.

Anticipated result: A conclusive, completed feasibility study and a completed REDD+ project design document, ready for validation with the communities and the government.

FINANCIAL ENVIRONMENT

Investment remains key for expanding, modernizing, and making targeted value chains more efficient and effective. Limited access to finance is one of the most significant constraints to increasing investment. Investment in turn provides the means to increase value addition, and thus incomes. Food security is increased and poverty reduced by the supplementary incomes created by the value added to products processed by equipment (which is funded by investments).

To improve the financial sector environment, IICEM intends to develop a series of activities on a one-off basis, by creating adapted credit products and by establishing business relationships along the value chains. Eventually these efforts are expected to modify the perception of risk and give actors incentives to increase the flow of cereal and horticultural products over the whole of the sub-region.

TOPIC AREA I: PARTNERING WITH THE INTERNATIONAL TRADE CENTER

IICEM has developed strong tools and approaches for the development of agriculture in Mali, which have enabled numerous cooperatives and agro-businesses to obtain the financing necessary for their growth. However, the financial sector environment remains unfavorable and the judicial system unreliable. In addition, best practices for financing agricultural credit are too little known and are not sufficiently generalized among all financial institutions. Although during recent years some banks have initiated procedures for SMEs, little has been done regarding the agricultural sector other than actions undertaken by the previous USAID project, Mali Finance, and then IICEM.

1.1 Improve SME financing.

Since IICEM concentrated on the BNDA and the BMS during the past two years, there is now an opportunity to broaden support to enable more profound change at the level of these banks as well as other commercial banks, enabling improvements in the financial sector environment. The objectives of this work are to:

- Help financial institutions better assess the risks of SMEs involved in exporting, by proposing analysis and selection tools that allow a business's potential and corresponding risk to be rapidly evaluated.
- Diversify the range of financial products at the disposal of the SMEs.

For this work plan, IICEM and ITC will concentrate on the following tasks:

- Identify the sector(s) involved (e.g., exports of rice, maize, sesame, groundnuts).
- Identify supporting institutions (potentially some of IICEM's GIE partners in different regions, some of the most promising consultancy agencies and cooperatives).
- Identify and finalize an agreement with a specific financial institution to respond to the financial needs of the involved businesses or cooperatives.
- Adapt learning material to the Malian context, especially the agro-industrial sector.

Anticipated result: Partnerships established with one or more banks.

TOPIC AREA 2: IMPROVING AND DEVELOPING AGRICULTURAL CREDIT PRODUCTS

2.1 Improve seed potato financing.

One of the difficulties experienced by producer organizations involved in potato production in Sikasso is the gap between the producers' need for seed and the financial capacity of input suppliers to reconcile corresponding documentary letters of credit. This damages the value chain: despite their good relations with suppliers, the best cooperatives (those that are pre-financed) obtain their seed after those that pay in cash. The last supplies to arrive are reserved for producer organizations operating on credit. This practice has important repercussions for the agricultural season.

2.2 Improve rice input financing in Sikasso.

The finance mechanism for groups has revealed some difficulties for the women producer organizations producing rice. These challenges should be discussed and ironed out. Under the current mechanism, when a group asks for credit, each of its members must open her account and receive a loan on an individual basis.

To improve the environment for service suppliers and value chain actors, the IICEM project will organize workshops to facilitate exchanges and negotiations with the producers, input suppliers, and financial institutions, in order to develop and agree on a permanent funding mechanism. The following tasks will be conducted:

- Hold separate meetings with the POs (women producers of potato and rice) and the financial institutions to better understand the needs of both sides.
- Propose solutions adapted to the needs of all parties.
- Hold exchange and negotiation meetings between potato value chain actors and, separately, between rice value chain actors, to establish agreements between the parties concerned.
- Evaluate, at the end of the season, the status of implementation of the agreements.

Anticipated results: Two agreements signed: one between Kafo Jiginew, women rice producers, and input suppliers; and one between the BNDA, potato producers, and input suppliers.

2.3 Develop agricultural credit products for the value chains supported by IICEM.

As mentioned in the Activity Cluster 3 (Improving Financial Services) sections for each of the value chains previously presented, IICEM will support the development of business relations between producers, traders, purchasers, and financial institutions, particularly to carry out the following tasks:

- Set up input credits and storage credits for the beneficiaries of the INTSORMIL program.
- Develop banking funding to reduce pre-funding of the tiger nut exporter, and potentially of maize (with Moulins de Sahel), sesame, and groundnuts in Koulikoro and Kayes regions.

Anticipated results: Increased access to financial services within IICEM value chains and, eventually, establishment of win-win business relations between value chain actors and financial institutions.

CROSS-CUTTING ACTIVITIES

Certain cross-cutting activities that affect the value chains previously discussed are presented in this section. These cross-cutting activities affect several value chains or are of sufficiently wide-ranging importance to distinguish them from value chain sub-activities.

TOPIC AREA I: PROMOTING GENDER-EQUITABLE OPPORTUNITIES

By the end of the second year of IICEM, the project was able to document significant results in production, productivity, and marketing activities, which led to increased incomes for rural men and women. In addition, the project had implemented several initiatives to specifically target women, with the goal of ensuring women's participation in the economic growth catalyzed by IICEM. For example, shallot value chain development activities largely target and benefit women along the Dogon Plateau, helping them boost production, productivity, competitiveness, and quality to reap \$400,000 from sales of fresh and dried shallots in 2009.

Under the new phase, IICEM aims to ensure that it is more attentive to the effects of its activities on various social structures and relationships involving both men and women. To do this, IICEM will address the following questions, the answers to which will be incorporated into activity planning, implementation, and monitoring and evaluation:

- How will the different roles and status of women and men within the community, the political sphere, the workplace, and the household affect the work to be undertaken? (This might include, for example, roles in decision-making and different levels of access to and control over resources and services.) The goal will be to ensure that the differences in the roles and status of women and men are examined, and that any inequalities or differences that will impede achieving project goals are addressed in the planned work.
- How will the anticipated results of the work affect women and men differently?

Tackling the concerns above will not provide an easy fix. No single tool or technical assistance scope of work is adequate to effectively respond to these questions; they require continuous reflection and incorporation into the project. IICEM's approach for addressing these will be to i) improve IICEM's value chain managers' understanding of gender-based concerns and identify with them the constraints and weaknesses of the project's approaches to date, and ii) ensure that the value chain managers and technical specialists weave in gender-related exercises, concepts, and analytical tools to adequately address gender-related issues as part of the value chain analyses and intervention planning. These exercises, concepts, and analytical tools will come from USAID's "Integrating Gender Issues into Value Chain Development (INGIA-VC)" methodology described in the handbook, *Promoting Gender Equitable Opportunities*. Activities and tasks are described below.

1.1 Improve staff and implementing partners' understanding of gender-based concerns, to improve IICEM's response to gender dynamics in activity planning, implementation, and M&E.

- Conduct focus group of value chain managers at the mid-year quarterly reporting and planning meeting to i) identify constraints and weaknesses in IICEM's approaches (to date) for incorporating gender-equitable opportunities into its value chain approach; and ii) undertake a SWOT analysis of the most significant gender-based constraints in certain value chains represented in the focus group. Both of these brief exercises will serve as a basis for activity 1.2 described below.

- Train value chain managers and assistants, the fisheries specialist, the natural resource management/biodiversity specialists, and the monitoring and evaluation team to use USAID's Gender Dimensions Framework for gender analysis as a means of increasing their awareness of and reflection upon all of the issues surrounding gender-related concerns in value chain development. This includes, but is not limited to, beliefs and perceptions about the economic roles of men and women and laws, policies, and institutions pertaining to rights regarding land, employment, services, and credit. The gender training will be a part of a broader value chain analysis capacity-building initiative scheduled for July 2010. The anticipated result is improved activity planning and supervising as the local managers' awareness of the various gender dimensions improves.
- Follow up with similar training for implementing partners.

1.2 Integrate a gender response into IICEM's value chains, to ensure more equitable opportunities.

In certain cases, IICEM has identified disparities between men's and women's opportunities in the value chains, and has responded accordingly. In the shallot value chain, for example, although the women have improved shallot quality and sales, they are proportionately more functionally illiterate than the men and therefore less skilled in business management and less able to obtain credit at microfinance institutions. In response, IICEM has started functional literacy training programs in the three northern regions, including the Dogon area, and in the Sikasso lowland areas. IICEM also started a training-of-trainers program to spread basic entrepreneurship and business management skills. Some of the trainers come from the microfinance institution Layidu Wari. The training will be a prerequisite for all women receiving credit.

The goal of this activity is to more explicitly identify and respond to the types of gender-related imbalances that are found across every value chain and in the project's fisheries and natural resource management/biodiversity conservation initiatives. The USAID-recommended process for integrating gender issues into agricultural value chains has five phases. The differing impacts of project activities on men and women will be incorporated into IICEM activity planning, implementation, and monitoring this year through the following tasks, which are based on the five phases.

- *Phase One: Mapping gender roles and relations along the value chain.* Following some basic training and in accordance with USAID best practices, each value chain team will map gender roles and relations along its value chain; technical specialists for other initiatives such as fisheries and natural resource management and biodiversity will lead a similar exercise. This will be launched between July and September for all value chains, with the goal of more thoroughly understanding men's and women's differing levels of participation and returns in the value chains. It will also explicitly identify the location and extent of gender inequalities along the chain.
- *Phases Two through Four: Moving from gender inequalities to gender-based constraints; assessing the consequences of gender-based constraints; and taking actions to remove gender-based constraints.* Following the mapping exercise, each value chain team, along with the fisheries specialist and the natural resource management specialist, will explore the constraints and identify consequences and potential actions needed to remove the gender-based constraints. Following discussion with the Chief of Party and USAID if needed, IICEM will take actions to remove the gender-based constraints.
- *Phase Five: Measuring the success of actions.* IICEM's draft Performance Monitoring Plan (PMP) for 2010 through 2012 includes performance indicators disaggregated by sex. Project management uses these sex-disaggregated performance indicators to gauge the level of participation by women in certain IICEM-funded activities, such as training, issuance of loans, or adoption of new technologies.

To better respond to gender balance issues, the M&E team will work with value chain teams to monitor the progress on the actions identified in Phase Four above that are intended to remove imbalances.

Along each of these steps, IICEM will involve implementing partners and validate assumptions with value chain stakeholders where prudent. IICEM will initially draw on the expertise of a U.S. or regional third-country national gender expert who is familiar with USAID's INGIA-VC process. The gender expert will design and deliver gender training sessions as part of the capacity-building initiative for value chain managers and implementing partners (which is being organized by the expatriate capacity building and value chain specialist). The gender expert will also initiate the mapping exercise with the value chain leaders and establish an action plan for each value chain to complete phases two through four above. IICEM's local capacity building and gender specialist and the expatriate capacity building and value chain specialist will monitor progress of phases two through four on a week-to-week basis.

TOPIC AREA 2: FACILITATING TRANSPORT AND TRADE

Limited access to markets is an important constraint that restricts the growth of value chain incomes. Reducing the constraints to trade and transport will increase access to sub-regional markets and will contribute to food security and poverty reduction.

CARANA Corporation is a long-standing partner of Abt Associates with tremendous experience in West Africa. CARANA is well known for its expertise in trade, transport, and policy formulation, and for its experience facilitating the development of trade corridors, including recent analysis of illegal taxes and road blocks on major transport routes in Mali. As a subcontractor under IICEM, CARANA will conduct an analysis of the obstacles to trade, particularly in the transport sector, and will set up an advocacy program to improve trade and development along each corridor.

CARANA will pursue a strategy for improving the commercial environment by conducting workshops with value chain teams on the results of surveys along the corridors. NGOs and civil society organizations will continue their advocacy with the general public and Malian authorities. Abt Associates' behavior change strategy (Agricultural Behavior Change, or AgBC) will complement CARANA actions in this sector. Finally, IICEM will set up relations with other actors who are intervening in the same areas, such as the USAID project PROMISAM and AfriqueVerte, which are also involved in marketing agricultural products.

Implementation Strategy

IICEM's implementation strategy for facilitating trade and transport includes:

- Building a multi-party strategy to improve advocacy efforts, based on the results of the WATH study that identified barriers and constraints at the level of transport and trade policies.
- Facilitating project coordination to improve synergies among various actors and to compound lobbying efforts with government agencies and departments.

In working on the constraints related to transport, IICEM will seek to improve the value chains' logistical efficiency, reduce transport costs, and improve producers' incomes. Using the WATH results as a basis, IICEM will pursue advocacy, integrating other actors and other value chains.

Planned Activities

IICEM will carry out the following activities:

- Coordinate and integrate value chain activities to emphasize transport and policy barriers at events organized by the value chain teams (e.g., workshops and conferences).
- Help the IICEM-supported unions and value chain organizations participate in WATH meetings on transport barriers.

- Establish linkages between the activities of several programs: WATH, PROMISAM, AfriqueVerte, and IICEM.
- Co-organize border conferences with PROMISAM, inviting other partners active in this field (WATH, AfriqueVerte, and ATP).
- Mandate the Agricultural Market Observatory (OMA) to evaluate the significance of the trade and transport barriers and their economic impact.

Anticipated Results:

- Awareness and political will increased (among the public, the media, and the government) to combat barriers to trade.
- A partnership established between IICEM and the focal point; IICEM participating in coordination of activities related to barriers to trade and transport.
- A Border Conference between Senegal and Mali co-organized with PROMISAM.

TOPIC AREA 3: IMPROVING MARKET INFORMATION SYSTEMS

An efficient market relies on wide dissemination of information on prices, quantities, and different qualities. IICEM supports trade and exchange through the expansion of market information systems that USAID has initiated or helped launch.

Under the regional project ATP/E-ATP, Mali is linked with the *Esoko* sub-regional information system, which advocates a private sector approach for obtaining data daily in real time. In Mali, AfriqueVerte received the operating license and must, in the coming years, sell services to different groups of consumers and merchants. IICEM will ensure that principal shallot markets are covered and that IICEM rural partners are informed of the system.

Under the Livestock CRSP, USAID/Mali has begun setting up a management information system at OMA and the National Directorate of Production and Animal Industries (DNPIA) to support the meat value chain. This system advocates an approach for obtaining public sector data on a weekly basis. This information is very useful for food safety management and also benefits the producers and traders. Tests are now completed and the program is in a roll-out phase. As the software is adapted, IICEM will promote the introduction of new value chains into the information system.

3.1 Build on existing market information systems.

IICEM will undertake the following activities:

- Discuss and sign contracts with AfriqueVerte to cover the Dogon Plateau shallot markets (Bandiagara, Koro, Bankass, Mopti,
- Organize training sessions for Dogon Plateau shallot producers and traders.
- Discuss and sign contracts, if possible, with AfriqueVerte to introduce new value chains, such as the rice value chain, into the *Esoko* system.
- Talk with Livestock CRSP and OMA to see how to introduce other value chains (for which OMA is already collecting data) into the Livestock CRSP market information system.
- Talk with OMA, the DNPI, the Livestock CRSP market specialists, and *Esoko* representatives about making data available from the CRSP software at the sub-regional *Esoko* system level.

Anticipated results:

Adequate coverage by AfriqueVerte for the market for shallots along the Dogon Plateau (Bandiagara, Koro, Bankass, Mopti); links established with the *Esoko* platform.

- Users of the shallot value chain (100 producers from 50 villages and 10 primary dealers) sensitized on the benefits of and trained to use the Esoko system.
- Coordination between IICEM and OMA and the Livestock CRSP to adapt the software to other value chains (changes to the system to be made by the Livestock CRSP before December 31, 2010).
- Support to OMA from IICEM to inform the public and rice producers and traders of the benefits of the market information system and to train potential users on the application of the cell phone market information system.
- Five hundred people introduced to market information systems. These individuals will have all made data requests between July 1, 2010 and December 31, 2010 using their cell phones to access the OMA-Esoko market information systems.

TOPIC AREA 4: SUPPORTING CEREAL & SEED COMMODITY EXCHANGES

In recent years, AMASSA developed a market system through which cereal producers and traders (enterprises and seed cooperatives) met in certain regional capitals (Segou, Sikasso, and Kayes). The producers sell different cereals to traders, primarily rice, millet, sorghum, and maize.

IICEM will engage its partner cooperatives to fully participate in cereal and seed exchanges. IICEM will take an active part in funding the seed exchange that was established last year under the sponsorship of the Ministry of Agriculture.

TOPIC AREA 5: FACILITATING SUB-REGIONAL AND INTERNATIONAL TRADE

Facilitating trade at the national, sub-regional, and international levels has been one of IICEM's core functions. In terms of international trade, IICEM intervened at the producer and exporter levels for fresh mango. For sub-regional trade, IICEM helped fresh mango, shallot, and potato producers export to neighboring countries. With the new value chains of maize and millet/sorghum, IICEM will continue to facilitate trade at the national, sub-regional, and international levels. In addition, IICEM will help agro-entrepreneurs, mostly women (some of whom are already selling in the sub-region), continue their business expansion.

In addition to the actions already outlined in the sections on value chains, IICEM will carry out the following activities to facilitate sub-regional and international trade.

5.1 Hold information sessions on the benefits and procedures of the African Growth and Opportunity Act.

The African Growth and Opportunity Act (AGOA) Trade Center was officially opened at the API-Mali in April 2010, in partnership with USAID's WATH project. IICEM will help raise awareness of the center and the advantages of the U.S. law that promotes exports, through the following tasks:

- Develop USAID and API-Mali documents to give to potential exporters who visit the AGOA Trade Center.
- Hold sessions on AGOA benefits and procedures, in partnership with API-Mali.

Anticipated results: Quality flyers and promotional materials produced, allowing the AGOA Trade Center to play its roll as the commercial center; a better understanding of the benefits and procedures of AGOA established among exporters, particularly small artisanal enterprises.

5.2 Develop e-commerce to allow potential international buyers to know Malian products.

Mali has a strong product offering from unique artists who deserve to be known. So far, participation in international fairs has allowed some participants to become known and to initiate partnerships. Not everyone can participate in these fairs, however. E-commerce now offers a powerful way for companies to become known and to develop business in the global market. Few, however, have the capacity to develop websites to offer products on-line, let alone set up the logistics needed to meet the demands of a global market.

To help certain companies and cooperatives that already have some experience selling internationally, IICEM intends to develop a partnership with the learning center CEFIB to conduct the following tasks:

- Finance a nine-month training course on e-business and computerized management for 10 young women; every woman will develop a site for a Malian company as part of her training.
- Select, together with CEFIB and API-Mali, 10 handicraft export or agricultural processing companies or cooperatives to participate.
- Support the selected companies in expanding their marketing approach.

Anticipated results: Ten people trained to help Malian companies develop e-commerce; professionals available in the Malian business environment who are capable of designing secure transactional websites for different economic actors—ranging from producers of handmade crafts to modern industrial processors—and able to offer different ways of processing payments on the internet; electronic commerce developed by at least 10 companies or cooperatives in Mali.

The increase in international export volumes will affect project results for 2011; it will be accounted for at that point.

TOPIC AREA 6: PARTNERING WITH A MINING COMPANY

The Morila SA mining company envisages closing its mine in 2013. In order to reduce the negative impact of mine closure and to contribute to improving local living conditions, the mine is developing an agricultural project for the community. IICEM will advise the mine and may support it in developing this large project for restructuring agricultural activities.

6.1 Develop the agricultural project and conduct agricultural tests.

IICEM will assist the Morila SA mining company to establish income generating activities in the Sanso commune. IICEM will:

- Help formulate the terms of reference for the project feasibility study.
- Visit the mine site and collect information on the results of the first-year agricultural activity tests.
- Conduct additional market studies, based on the results of the feasibility study.
- Support the extension of agricultural activities (vegetable and horticultural products, and cereal production), based on economic potential and market demand.
- Participate in studies for setting up 50 hectares of irrigation systems.
- Support the local population by structuring cooperatives that will enter into contracts with the business to be created.
- Hold training sessions on cooperative law and basic management.
- Support and train communities on best agricultural techniques in the areas covered by extension (June 2010), following the 2009 tests.

Anticipated result: Tests implemented on larger areas; a development plan for new crops and fruit trees adopted. Eventually, establishment of a realistic business project for the local communities, which will enable them to generate income, and thus rural employment, after the end of the mine in 2013.

TOPIC AREA 7: PROSPECTING AND PROMOTING AGRICULTURAL PRODUCTS

7.1 Explore and consolidate sub-regional potato markets in Ghana (October 2010).

This market prospecting will be carried out through the regional Union of Potato Exporters of Sikasso (URCEP) and the Agricultural Collective Interest Company (SICA). The goal will be to define the parameters of market requirements from potato traders and producers. The project will carry out the following specific tasks:

- Carry out a study trip to explore markets in Ghana (Shoprite) and consolidate trade agreements with clients in Burkina Faso through URCEP and SICA. The trip will include eight individuals with two vehicles for 12 days.
- Deliver a test shipment to Shoprite in Ghana.
- Calculate the cost effectiveness (profit and loss statement) of potato sales on the new markets.

Anticipated result: Commercial relationships established between the Mali operators/producers and Shoprite in Ghana to achieve export objectives of 2,800 tons of fresh potato (on new and old markets).

7.2 Sponsor a study tour to China, covering new products and techniques and agricultural equipment (April 2010).

China is increasingly present in the agricultural market, both by offering agricultural equipment and through its world-level production of agricultural products. China's expertise is recognized and could enable Malian producers to produce new horticultural products, introduce new production techniques, and benefit from equipment at a very low price. This trip will include six persons for eight days, not counting travel days.

7.3 Sponsor a study tour to Nigeria to look at parboiling rice and at experiences with soy (July 2010).

In Nigeria, most rice is parboiled (around four to six million tons of paddy a year). Artisanal parboiling in Nigeria is reaching a commercial scale. The USAID-funded Increasing Competitiveness and Food Security in Nigeria (MARKETS) project and the DFID-funded Promoting Pro-Poor Opportunities in Commodity and Service Markets (PrOpCom) program have worked for years to improve the parboiled rice value chain. This trip will enable Malian participants to identify successful parboiling equipment and practices, practices for drying rice after parboiling, various means of organizing the processing of large quantities of rice, and the types of hullers and mini rice-mills used. At the same time, participants will be able to visit the soy region, including both research stations and factories for processing soy into oil and meal. The trip will include 12 persons for 12 days, not counting travel days.

7.4 Hold a prospecting trip to Spain to identify modern equipment to wash and dry tiger nuts and processing materials for tiger nuts (August 2010).

IICEM is working in the tiger nut value chain, where there is high growth in the volume exported. There is also a national and sub-regional market for processed products, such as juice, which provides an interesting business opportunity for Malian producers and processors. This trip will include eight persons for eight days, not counting travel days.

7.5 Sponsor a study trip to Europe, Africa, or North America to learn from experiences in the production of seed potato (November 2010).

According to preliminary research, Canada and Rwanda produce nurseries of potato plants that are used directly for seed. Using another method, the International Potato Center has developed a practice to produce tubers in an air-based system without soil. This enables a five-fold increase of production of micro-tubers. These various experiences call for more in-depth examination to identify the key conditions for success, with the degree of cold temperatures at night being one of the important parameters. This trip will include eight persons for eight days, not counting travel days.

TOPIC AREA 8: PARTICIPATING IN NATIONAL, SUB-REGIONAL, AND INTERNATIONAL TRADE FAIRS

IICEM plans to arrange for Malian value chain actors to participate in the following trade fairs:

- National Fairs—SECO, Salon International de l’Agriculture (SIAGRI), Festival on the Niger, African Rice Congress: IICEM will continue to sponsor relevant national fairs and support partner value chain actors in participating in them.
- Packaging fair in Dakar, Senegal (12 individuals, four days).
- Journées Agro-Alimentaire (JAAL) Fair in Ouagadougou, in partnership with ATP (12 individuals, two vehicles).
- International Agriculture Fair and visit to Rungis, France (eight individuals, seven days).

TOPIC AREA 9: ENGAGING IN COMMUNICATIONS ACTIVITIES

IICEM communications activities are aimed not only at USAID, but also at all the actors in the value chains targeted by the project. To provide technical activities with greater visibility and enhance understanding of project initiatives, IICEM plans to collect and disseminate information through field missions to partners and actors of the various value chains.

The first activity of this year will be to develop a strategic communications plan that will effectively respond to the project’s various needs. Other communications activities that have already been identified include the following.

9.1 Produce information to support project activities.

- Design, compose, and submit to USAID 12 success stories, one per month.
- Design, produce, and disseminate a documentary film on current irrigation activities.
- Design, produce, and disseminate a film on experimental SRI activities in the rain-fed zone.
- Develop and produce a documentary film on GRN and biodiversity activities.
- Design, produce, and disseminate a documentary film on potato production, conservation, and marketing activities.
- Reproduce flyers.
- Create transparent stickers with the IICEM logo for vehicles.
- Produce cloth with IICEM and USAID logos for employees.
- Produce caps with the IICEM logo.
- Reproduce and disseminate field photos with commentaries.
- Develop and produce posters on project technical activities, especially the new technologies introduced.

- Create a listening center at the level of the Unions of the Mopti Federation, to enable organization and extension of new technologies introduced, either through posters or CDs.
- Design, produce, and disseminate an interactive CD/DVD on the IICEM project.

9.2 Participate in promotional events.

- Participate in national, sub-regional, and international agricultural and trade fairs, such as SECO, the Festival on the Niger, the Ouagadougou agricultural fair, SIAGRI, and the African Rice Congress.

9.3 Engage in communications for behavior change.

- Analyze and develop an approach for communications for behavior change (AgBC) during value chain analyses.
- Support the implementation of AgBC activities emerging from value chain analysis.
- Ensure that all value chain managers use available communications tools effectively to disseminate new technologies, create change, and achieve project targets.

9.4 Collect and utilize geo-spatial data for reporting.

- Collect data on geo-referencing of the hectares receiving IICEM support.
- Set up a special geo-referenced database with socio-economic data, following the census, through a partnership with the IER geographic information systems (GIS) unit.
- Incorporate information from the monitoring team's geo-referenced database into the IICEM M&E team's data.
- Develop regional maps of IICEM sites with different themes.

9.5 Facilitate media coverage of IICEM activities.

- Seek TV coverage of events supported by the project.
- Support at least six special TV broadcasts on the project's technical activities (one every six months).
- Seek newspaper coverage of project activities, specifically in the "Agriculture" column in the ESSOR newspaper (one article per month).
- Develop six radio broadcasts for the ORTM "Development Equation," one broadcast every month.

9.6 Update the IICEM website.

- Place field activity photos, with commentaries, on the website.
- Place success stories on the website, once they have been approved by USAID.
- Gather news and information about IICEM activities hosted on the net and place them on the website.

9.7 Provide communications training for IICEM's technical field staff.

- Creating success stories
- Effective reporting: to improve the quality of content that is received by technical field staff in order to better demonstrate IICEM's executed activities.

TOPIC AREA 10: SUPPORTING SME DEVELOPMENT AND ORGANIZATIONS

10.1 Support training for entrepreneurship through an alliance with Making Cents International.

IICEM will enter an alliance with Making Cents International to provide training adapted for women in marketing cereals and horticultural produce, as well as in processing sectors. The training sessions will primarily target non-literate urban and rural women. Initially, the training will be aimed at members of the women's organizations supported by AMASSA/AfriqueVerte who are involved in the agro-business sector in Mali, particularly in the Kayes, Koulikoro, Ségou, Mopti, and Sikasso regions. In turn, these women will train members of other women's organizations and groups supported by IICEM through AMASSA/AfriqueVerte. In order to build capacity, as requested by financial institutions, IICEM will train credit agents of Layidu Wari, a microfinance institution geared mainly towards women. These agents will train future borrowers, in order to reduce credit risk.

IICEM, with the support of Making Cents International, will carry out the following tasks:

- Provide entrepreneurship training to eight women trainers from AfriqueVerte and 10 LayiduWari credit agents.
- Provide training to four other women trainers from AfriqueVerte and to members of other partner NGOs and GIEs.
- Set up a system to list trained persons, their activities, products, and volumes marketed and processed.
- Propose additional training for IICEM's women partners possessing a greater educational background.

The women trainers and credit agents will transfer knowledge to borrowers and to members of other women's organizations. They will:

- Provide guidance on concepts linked to business management.
- Explain the notions of market supply and demand.
- Develop a launch strategy, an operational strategy, and a financial strategy.
- Develop and implement a permanent marketing strategy for better sales in a competitive market.
- Practice business simulations and some commercial concepts.
- Become familiar with financial planning concepts and initiate development of business plans.
- Help trainees leave the informal sector by seeking more funding from financial institutions.

Anticipated result: A total of 1,000 women trained, who will eventually improve management of their businesses and invest in order to increase their profits.

TOPIC AREA 11: CONDUCT VALUE CHAIN TRAINING.

Given IICEM's value chain approach and the amount of fundamental work that is taking place in the field to help actors develop value chains, IICEM clearly needs to commit human and financial resources to training on analysis and the value chain approach, and to disseminating these concepts.

Project subcontractor ACDI/VOCA will train the following audiences through a training tree: i) IICEM program employees; ii) field implementation strategy partners (including NGOs, GIEs, and private businesses); iii) producer organizations and the unions at the heart of the strategy; and iv) actors in the widest sense, such as members of value chain stakeholder groups.

At each training session, representatives from relevant Agencies of the Malian Government will be invited to participate, in order to promote systemic, sustainable change. After IICEM's closeout, these government agents will serve as a form of institutional memory for IICEM, carrying the market-oriented value chain approach forward in Mali.

TOPIC AREA 12: ENGAGE IN INSTITUTIONAL STRENGTHENING.

Following this series of training-tree training sessions, ACDI/VOCA will work with IICEM managers and specialists to determine the most immediate capacity-building and institutional strengthening needs. It may be appropriate to make alliances with other IICEM partners, such as sub-contractors Sheladia and CARANA, sub-regional partners ATP and WATH, other USAID accelerated growth programs (such as CRSP), and Peace Corps volunteers. For the first year, the goal will be to develop a reinforcement program adapted to the various needs of actors in the field. Some training contents may be developed and ready for deployment in the second year of IICEM phase 2.

IICEM TOOL BOX

IICEM has developed various tools that make it possible to offer financial services, through the establishment of loan guarantee funds and a partnership with the International Trade Center (ITC). IICEM also facilitates demand for financial services by seeking competitive bids for access to two grant funds—the Strategic Activities Fund (SAF) and the Innovation Grants Fund (IF)—that promote innovative agribusinesses. The project will offer specific training to encourage women to become entrepreneurs. These tools enable IICEM to offer effective services that are tailored to the needs of project partners, including financial institutions, agricultural cooperatives, and agribusinesses.

TOPIC AREA I: SECURING FINANCIAL SERVICES

Most of the traditional institutions are hesitant to fund agriculture, apparently due to the risks of the activities and the absence of guarantees. To encourage financial institutions to engage in activities along all the links of the value chains, IICEM will set up partial guarantee funds for the short and medium term.

1.1 Provide short-term guarantee funds

These short-term guarantee funds allow IICEM to increase access to finance by expanding financial services to a greater number of actors and POs in the targeted value chains. The following tasks will be undertaken:

- Negotiate and sign short-term agreements with the financial institutions, including \$345,000 with the BNDA, \$92,000 with Kafo Jiginew, and \$75,000 with the BMS. Other funds may be set up as well, up to a total additional amount of \$129,000.
- Continue to facilitate relationships between value chain actors and financial institutions by partially covering (50%) risks for input credit and marketing of agricultural products, as well as strengthening revolving funds for producers, traders, agribusinesses, and processing businesses.
- Analyze and recommend enterprises applying for credit from financial institutions.
- Monitor reimbursement of loans facilitated with the banks and MFIs.

Anticipated result: Development of agricultural credit portfolios by the financial institutions, following improvements in their knowledge of the sector and their ability to measure its risk. In return, this implies facilitation of financial services for short-term financial needs for agriculture.

1.2 Provide medium-term guarantee funds.

The project will institute medium-term guarantee funds to enable interested actors to acquire agricultural tools and materials such as diesel-powered pumps, threshers, hullers, and roto-tillers. Any investment in agricultural equipment will be eligible for consideration. The following tasks will be carried out:

- Negotiate and sign medium-term guarantee agreements with the financial institutions, including \$225,000 with the BNDA and \$87,500 with Kafo Jiginew. Other funds could also be established, up to an additional amount of \$175,000.
- Support agribusinesses and POs in preparing their funding application documents.
- Analyze and recommend enterprises applying for credit from financial institutions.
- Monitor reimbursement of loans facilitated with the banks and MFIs.

Anticipated result: Access by producers, traders, agribusinesses, and processors to permanent sources of funding for their needs (e.g., materials and tools for production, construction of infrastructure for storage,

factories). This implies in return that the financial services and medium-term financial needs are addressed for the agricultural sector.

1.3 Establish internal mechanisms [within producer organizations] to guarantee credit

One of the constraints to funding producer organizations is their own limited financial capacity and the absence of information concerning management. In addition to providing training and installing an accounting system, tools will be afforded to POs to help them better account for available capital, thus strengthening their financial capacity and minimizing risk associated with loans. In effect, it is a matter of helping the POs to respect the financial measures of the law. Support will be provided to POs to:

- Train leaders on the rules for cooperative operations and financial management.
- Establish shares (cooperatives' capital) by IVP operators.

Anticipated result: Funds available within at least three POs per region; shareholding norms (as contained in the cooperative law) respected by at least three POs per region.

1.4 Standardize the simplified format to apply for funding.

A simplified format for setting up a funding application file has been developed. This format will facilitate improvements in financial analysis, leading to better evaluation of risk associated with loans. Training will be provided to representatives of IICEM, and to partner NGOs and GIEs.

TOPIC AREA 2: ADMINISTERING THE STRATEGIC ACTIVITIES FUND

As it was last year, IICEM will use the Strategic Activities Funds (SAF) to support private initiatives to create agro-industrial products. The goal will be to develop investments in the agricultural sector and facilitate the emergence of model entrepreneurs. In the long term, IICEM will seek to accelerate Mali's economic development. All initiatives that create market opportunities for the target value chains will be eligible. To do this, IICEM has a budget of 375 million CFA for the following tasks:

- Launch the project selection process in the SAF framework, particularly emphasizing broader communications to reach a maximum number of eligible project entrepreneurs.
- Update the SAF manual to reflect a minimum of 25 million CFA per SAF project and maximum of 150 million CFA.
- Recruit technical assistance agencies to develop the business plans of selected entrepreneurs.
- Establish a project selection committee.
- Sign grant agreements with entrepreneurs.
- Facilitate technical assistance to help establish businesses.
- Organize prospecting missions to choose equipment, if relevant, or to seek markets for the products.

Anticipated result: Technical and financial contributions made for the creation of four semi-industrial or industrial agro-food production units.

TOPIC AREA 3: DEVELOPING AN INNOVATIVE GRANT FUND

The Strategic Activities Fund established by IICEM last year is an important initiative, however, it has been found to favor large agro-industrial projects that require significant preparation of technical and financial business plans. This leaves small-scale businesses or projects without an opportunity for financial support. Apart from this limitation on size, IICEM has to take into consideration the directions for the project's new

phase—support for new value chains and full entrance into processing activities. All of these factors have led to the development of an Innovative Grant Fund (IGF). The IGF will be a flexible tool that will enable IICEM to develop smaller agribusinesses. To achieve this, IICEM has a budget of 175 million CFA for the following tasks:

- Create an IGF management manual with the following criteria:
- IF per-project minimum of 2 million CFA and maximum of 25 million CFA.
- Minimum required investment of 20 percent of the total cost of the proposed project or investment for businesses under male ownership, with the IGF covering a maximum of 20 percent of total investment costs.
- Minimum investment of 15 percent of the total cost of the proposed project or investment for businesses under female ownership, with the IGF covering a maximum of 40 percent of total project costs.
- Launch the tender process, with information provided by partner GIEs to operators in the targeted value chains.
- Support preparation of IGF application documents and funding requests.
- Convene the project selection committee and obtain signatures from entrepreneurs.
- Provide technical assistance to assist businesses.

Anticipated result: Technical and financial support provided for the creation or expansion of 10 semi-industrial or industrial units for agro-food processing. Projects for farms integrated with production—cereals, fish-farming, poultry, and horticultural products—will be given particular consideration, as will processing businesses.

TOPIC AREA 4: ADMINISTERING GRANT AGREEMENTS

Through its strategy to support smallholder farmers, IICEM has opted to work closely with cooperatives, unions, and agribusiness entrepreneurs. In order to support the value chain actors, IICEM will provide grants to NGOs, GIEs, or businesses that adopt an approach of working with smallholder farmers on a value chain with a defined market.

The objective of these grant agreements will be to ensure supervisory support for several villages and several men's and women's producer organizations, on a significant number of hectares. The grant agreements will thus provide a way to scale up, through numerous partnerships, the dissemination and use of IICEM project technologies.