Republic of the Philippines

Development Study on Local Industry Promotion in ARMM

Final Report

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CHAPTER 8 ACTION PLANS FOR LOCAL INDUSTRY PROMOTION

8-1 Composition of Action Plans

The composition of action plans in this chapter is as follows.

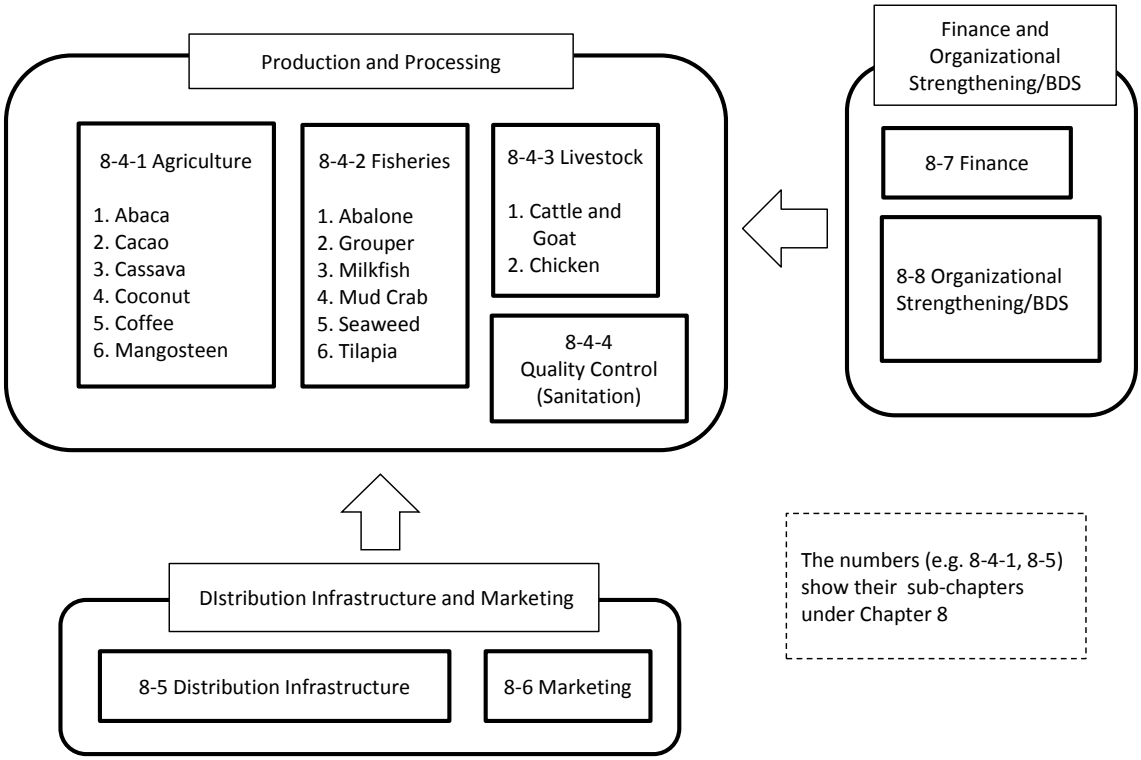


Figure 8-1: The Composition of Action Plans

This study principally selects three priority sectors, agriculture, fisheries, and livestock. Quality Control is closely related to processing and its action plan is explained under the framework of production and processing. As important cross-cutting issues to boost production and processing, the study team identifies major components, which are Distribution Infrastructure, Marketing, Finance and Organizational Strengthening/BDS.

In addition, these action plans are categorized by the needs of major technical and financial supports for implementation. In order to enhance feasibilities of action plans in various given situations, the study team envisions three possible supporting bodies for technical and financial inputs namely, the ARMM government, donor agencies and private investors as shown below. It

should be noted that even when donor agencies and private investors will be the major supporters, the proposed plans will be implemented by the ARMM government which will provide necessary inputs such as counterpart personnel and other logistics. These personnel and logistics will be based on needs of these plans. In addition, these are just possible indicators to select appropriate action plans referring to the availabilities of these partners, which will work with the ARMM government.

Table 8-1: The Categories of Action Plan by Major Supporters

	Major Technical and Financial Supporters	Action Plan
1	ARMM	8-4-1 Agriculture 8-4-2 Fisheries 8-4-3 Livestock 8-4-4 Quality Control (Sanitation)
2	Donor Agencies	8-5 Distribution Infrastructure 8-7 Finance 8-8 Organizational Strengthening/BDS
3	Private Investors	8-6 Marketing

Action plans for Agriculture, Fishery, Livestock and Quality control were designed with envisaged major technical and financial supports by the ARMM government. However, donor supports can be considered to assist the staffs in all the implementing government agencies for the management of these plans, when necessary.

If the donor agencies are interested in working for local industry sector with the ARMM government, the government can consider the sectors which require support from donors. These sectors are Distribution Infrastructure, Finance and Organizational Strengthening/BDS. Again, supports by donor agencies are not pre-conditioned, but the Study proposes the priorities among sectors for outside supporters. For action plan of Marketing, private investment should be a vital input for implementation.

8-2 Implementation Structure of Action Plan

The action plans discussed in this chapter are on a sector basis, though their interrelations were aforementioned. Financial services, marketing, and BDS, are vital inputs to boost production. In addition, marketing and infrastructure are significant foundations for industry promotion. In order to create synergy effects through integration of these action plans, all the leading agencies should set up a management structure. Although a management structure is highly dependent on different combinations of the plans, the chart below shows a sample of implementation structure

under the situation that a project covers multi-sector components, such as production, financial services, BDS, etc. Details are presented in Figure 8-2.

The board of directors is the supreme authority for determining the general direction of the project and coordinating leading agencies. The members of the board of directors are expected to be secretaries of relevant government agencies. Since the board is not expected to hold meetings often, the project will set up the secretariat to manage all the operations. The secretariat will provide training programs to local technical working committees, which will coordinate provincial and municipal levels activities. In addition, the secretariat will coordinate with relevant government agencies to rehabilitate or enhance infrastructure including roads at barangay levels.

Since municipal LGUs are very closely associated with producers' and processing groups, these LGUs will coordinate the necessary arrangements for technical transfers with these groups at the municipal or barangay levels. Target municipal LGUs in technical working groups will also facilitate marketing matching between producers' and processing groups and local traders. In addition, these LGUs will be responsible for regularly monitoring these groups. Since some LGUs formed alliances under the supervision of the Department of Interior and Local Government-ARMM (DILG), the board of directors can consider associating with these alliances as a local advisory body. Private and public financial institutions are also important components for promoting local industry. Under this project, they are the primary target groups to be strengthened.

A technical working group will provide technical inputs to producers' and processing groups. In the areas where private BDS providers are available, these groups will be urged to access to the necessary services. These groups will have two major marketing channels. One is to sell to local traders or middle men, and the other is a direct sale to consumer markets. Development of infrastructure will contribute in creating positive effects to smoothen business flows.

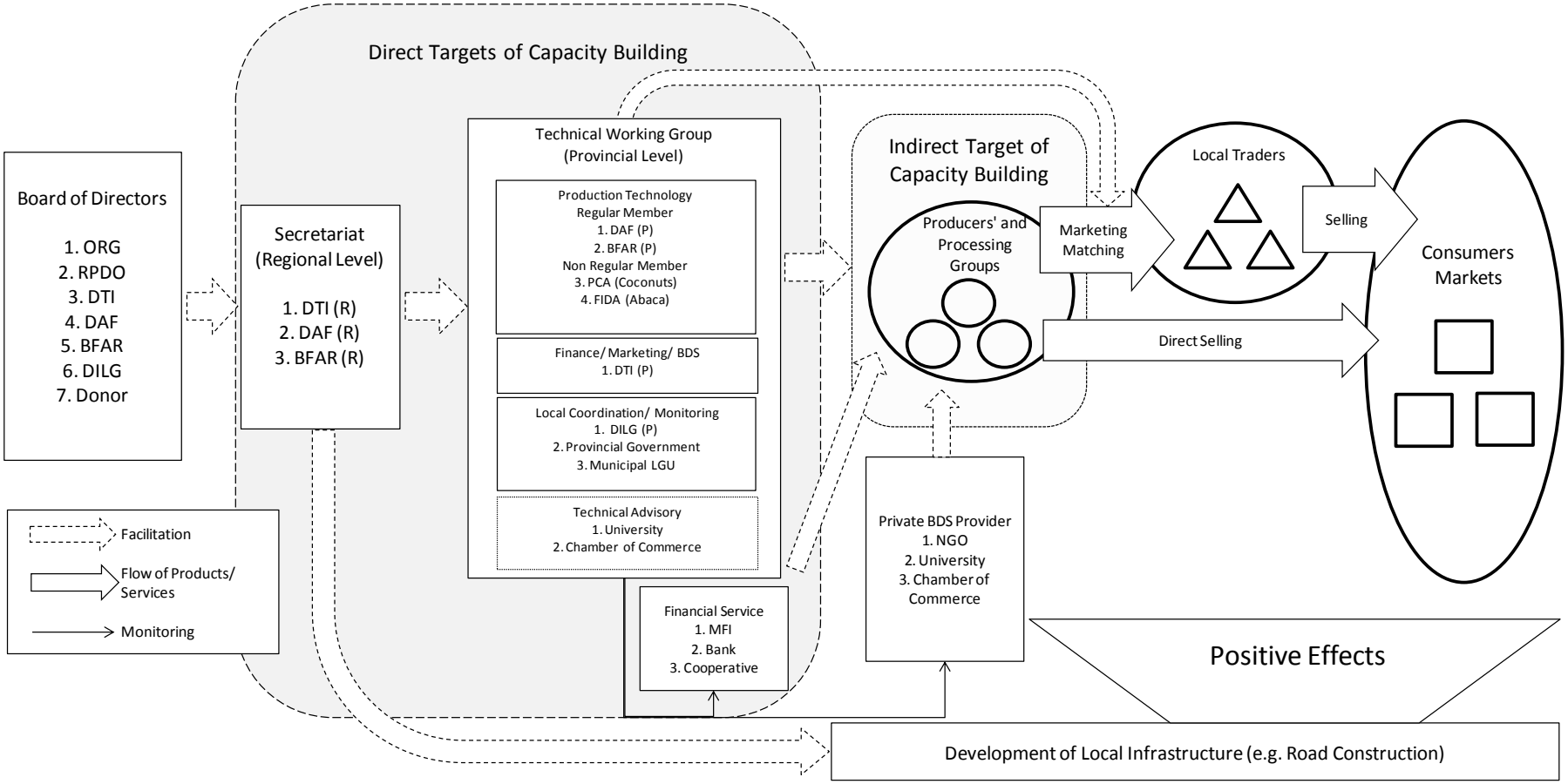


Figure 8-2: Sample Implementing Structure of Action Plans for Local Industry Promotion in the ARMM

8-3 Key Roles of the ARMM Government for Implementing Action Plans

Action plans proposed in this chapter are mostly managed by relevant departments of the ARMM govewrnment such as the Department of Trade and Industory-ARMM (Hereinafter called DTI), the Department of Agriculture and Fishary-ARMM (DAF), Bureau of Fisheries and Aquatic Resource-ARMM (BFAR), Regional Board of Investment (RBOI) and so on. However, they are not fully equipped with management skills yet though their autonomy should be respected by any third parties which might be able to support the government in implementing the plans. Key roles of the departments of the ARMM in the action plans are emphasized here though they are described in the each action plan. These roles must affect the success of the action plans during the implementation.

The roles are:

(1) Coordinating with local governments at province and municipality levels to select target beneficiaries with fair-minded after properly collecting relevant information and data and analyzing them for designing the plan to convey effect of the action plan efficiently and effectively to the people of the ARMM

(2) Structuring solid and smooth relationship with LGUs and technically supporting organizations and institutions of private business runners, academe, other public bodies outside of the ARMM in order for the plans to construct monitoring body and perform monitoring activities accurately at proper timing

(3) Equipping proper budget management to disburse and spend budget efficiently and transparently to maintain accountability to people and institutions concerned

(4) Allocating persons-in-charge, who have a strong will and passion to devote her/himself to the proposed action plans, to harmonize with domestic and external resource expertise to carry out the plans and to cope well with technical and managerial problems which might take place during the implementation

(5) Maintaining documentation on any activities and important decision process during the implementation to disclose and share the status and progress of the action plans at official meetings and at any time when required

(6) Sharing information on peace and order situation with all the stakeholders of the action plans to avoid any danger and loss of life. If necessary, military arrangement should be provided.

The roles of the ARMM government mentioned above should be confirmed and consulted with the government before designing and implementing the proposed action plans.

8-4 Production and Processing

8-4-1 **Agriculture**

8-4-1-1 Abaca

Project Title:
Abaca Industry Development to Improve Living Conditions of Abaca Producers through Development of Small-Scale Fiber Craft Products in the ARMM

(1) Project Summary

1) Background

Abaca is one of the Philippines' most important and profitable agriculture exports. It is suited to a tropical climate and high to moderate precipitation areas such as the ARMM, particularly Lanao del Sur and some parts of the island province.

However, productivity of abaca in the ARMM is low due to local farmers' unsophisticated technology. Varieties cultivated are low yielding, and some are sourced from disease infected areas. Crop management relies on traditional methods. Most farmers use large immovable extraction machines that are fixed at one place. These are usually built near their residence, even if it is far from their farm sites, for security against theft. This situation hinders timely processing of abaca ribbons, which causes discoloration and quality degradation, and thus lowers the selling price potential. Another factor is the absence of drying facilities. All these limitations reduce the quality of the abaca produced in the region.

Despite the demand for value-added abaca fiber products currently developed in the Philippines, the abaca handicraft cottage industry has not yet developed in the ARMM. The potential of employment creation in these communities through establishing abaca handicrafts industry remains untapped although it can create a range of opportunities for rural people in the ARMM.

ARMM farmers have limited access to consistent technical assistance for production, post-harvest processing, and abaca fiber handicraft processing from the Fiber Industry Development Authority (FIDA)[194]. FIDA Region X, for example, has limited capacity to handle Lanao del Sur and its surrounding areas alone. This is because this region faces a limitation of

[194] FIDA Region IX, Region X, and Region XI cover provinces in islands (Basilan, Sulu, and Tawi-Tawi), Lanao del Sur, and Maguindanao, respectively.

personnel assigned, with only seven staffs having multiple functions in the region. To overcome this, the LGUs and the local Agriculture Offices should be technically backed-up by FIDA, state universities, and colleges through their extension arms to provide necessary services to the farmers.

2) Target Areas

Out of the 25 most active abaca production municipalities, which are largely located in the mountainous areas of the second district of Lanao del Sur province, two LGUs may be selected in the pilot phase. In the following phase (the expansion phase), five LGUs in Lanao del Sur and provinces in the islands will be targeted in the action plan (Table 8-2).

Table 8-2: Number of Target LGUs in the Project

Phase	Province	Number of LGUs
Pilot phase	Lanao del Sur	2
Expansion phase	Lanao del Sur and 3 island provinces	5

3) Target Groups

Target groups in two LGUs for pilot phase[195] and five LGUs in the expansion phase[196] will be small-scale abaca growers, cooperatives, and/or women's groups with the potential to engage in abaca fiber handicrafts. The number of the target is summarized in Table 8-3.

Table 8-3: Number of Target Farmers and Cooperatives and/or Women's Group

Phase	Total number of farmers	Total number of MPC and/or women's group
Pilot phase	120 (2 LGUs)	2 (1 coop. and/or group x 2 LGUs)
Expansion phase	240 (5 LGUs)	5 (1 coop. and/or group x 5 LGUs)

4) Period

The 10-year project is divided into two phases: a pilot phase running for five years and an expansion phase for five years.

5) Project Purpose

To improve small-scale abaca growers' standard of living through the quantity and quality improvement of abaca production and to raise the socio-economic status of cooperatives and/or

[195] In the 25 most active abaca production districts, abaca growers/groups will be selected by proposals from them with consultation of LGUs and the DA provinces.
[196] Abaca growing areas are specified first and target/groups are also selected as the same way as it was for the pilot phase.

women's groups through stimulating the abaca fiber handicraft industry as a small-scale value added processing industry.

6) Expected Outcome

- DAF can manage the project cycle (planning, implementation, monitoring, and evaluation) and perform documentation of the project cycle management, technical problems, and improvement process of abaca development in collaboration with FIDA.
- Seventy percent of abaca growers technically supported by the project can increase the quantity and improve the quality of fiber.
- At least three cooperative and/or women's groups start fiber handicraft processing businesses.

7) Expected Impact

- Gross income from abaca fiber per ha becomes Php 105,000 with the following assumptions; i) yield of abaca fiber is 3,000 kg/ha-year, ii) fame gate price is Php 35/kg, and iii) 100% of the harvesting share lies with the land owner.
- Yield of abaca becomes 3,000 kg/ha-year at the fifth year after planting.

(2) Activities

1) Project preparation, management and holding an abaca summit

DAF collaborates with FIDA Region X to manage the project cycle, planning, implementation, monitoring, and evaluation. A monitoring system is well established, coordinated between the two organizations. At the beginning of the project, the project office is established in DAF. The two organizations conduct a baseline survey to accumulate basic data and select target areas and target groups.

An abaca summit is held to raise awareness and knowledge about project activities among stakeholders: target groups, DAF, ARMMIARC, ATI, FIDA Region-X, the LGUs, and State University and Colleges (SUCs) such as BUAD (Datu Blo Umpar Adiong) Agriculture School and the College of Agriculture, Mindanao State University (CAMSU).

2) Technical instruction to abaca growers

Extension material and equipment are prepared by collaboration among ARMMIARC, ATI, FIDA, BUAD Agriculture School, and CAMSU. Abaca cultivation technique is explained in the manual, which contains the following topics: i) establishing an abaca farm, ii) site selection, iii) varieties selection, iv) propagation, v) shading, intercropping, and value formation, vi) planting,

vii) insect and disease control, and viii) harvesting. Based on the contents of manual, Training of Trainers (TOT) on abaca production is conducted to develop technical staff of the target LGUs. The training is provided by FIDA, BUAD Agriculture School, and CAMSU at the CAMSU extension service demonstration farm in Marawi City.

Abaca growers are organized for efficient extension provided by technical staff of the LGUs (including Municipal Agricultural Officers and Agricultural Technologists) with the help from FIDA and the academe. Core farmers are selected from the groups to attend a Farmer Field School with a demonstration farm, which is also established in the farmers' fields [197]. Propagation is performed to produce disease-free, tissue-cultured seedlings and deliver recommended varieties of planting materials (Tangongon, Maguindanao, and Bungolanon) to farmers by BUAD Agriculture School and CAMSU at the CAMSU extension service demonstration farm. Technical guidance is provided to the target farmers on appropriate cultivation at core farmers' fields as well as CAMSU's demonstration farm at certain stages of abaca's growth.

Cover-cropping or intercropping as value formation is recommended when advising on appropriate cultivation. For instance, cover-cropping with other crops such as mung beans, cowpeas, and other non-climbing leguminous crops to create moisture in the soil and provide additional income to farmers is recommended. Intercropping with upland rice, peanuts, and other short crops are introduced while the abaca plant is at an earlier growth stage from 1 to 15 months.

3) Improvement of post-harvest processing by introducing group use of a stripping machine

A post-harvest training module and materials are also developed, including: i) right time harvesting, ii) tapping, iii) tumbling, iv) tuxying (knife and machine), v) fiber extracting (knife and spindle stripping machine), vi) drying (sun drying and mechanical drying), vii) bundling and storing, and viii) fiber quality checks, classification, and grading. TOT is also conducted for the technical staff of the target LGUs by BUAD Agriculture School with the help from FIDA.

A group usage system of a mobile type stripping machine recommended by FIDA is designed, and a community warehouse is set up for the farmers' group to perform efficient post-harvest processing and improve fiber quality to obtain a better selling price. If the group agrees with the group usage system and warehouse, the machine is introduced and the warehouse is constructed based on a request to the LGUs and cost sharing with the users. Use of the machine is taught on

[197] Madamba, Calanogas, or Balindong are recommended LGUs to establish demonstration and propagation farms.

the site, and guidance on the maintenance method is also provided by FIDA.

4) Encouragement of quality assurance awareness among supply chain stakeholders

Skill development seminars are facilitated by DAF and FIDA for abaca growers, fiber classifiers, graders, traders, processors, and exporters to help them produce and maintain high quality fibers. During the seminar, the quality of abaca fibers for exportation purpose is strongly emphasized to the stakeholders. The quarterly seminar also provides participants with an opportunity to seek guidance to acquire FIDA licensing for direct sales to exporters.

5) Introduction of conversion technology of fibers

FIDA and the LGUs investigate and identify needs for value added processing among existing women's groups[198] in the target areas. Potential women's groups are trained to acquire skills for producing value-added handicraft products: Sinamay (primary processed product) and finished handicraft products such as handbags, purses, and business card holders.

First, to raise a group's awareness of income generation activities, the group is exposed to Sinamay processing and the application work of sinamay of entrepreneurs in Mindanao or within the country during a study tour. The activities of United Maligang Farmers MPC on the Abaca Venture in Kiamba, Sarangani Province; abaca weaving activities called *hinabol* in the hinterlands of Bukidnon as primary processing; and abaca fiber handicraft enterprises in Iligan and Cagayan de Oro can be recommended for a study tour in Mindanao.

A series of hands-on processing training sessions are conducted for the groups in collaboration with FIDA. The training module and materials are developed by FIDA. The training includes i) fiber extraction, ii) Tinagak and Sinamay making, iii) bleaching, dyeing, and weaving, iv) bleaching, dyeing, and scrunchy making, and v) product development, as presented in Table 8-4. For now, FIDA arranges to use active processing groups (cooperatives and enterprises) in Cagayan de Oro, Iligan, Davao, and the Sarangani province to train the target groups.

[198] About 25 informal and formal women's groups conduct business such as malong weaving (traditional cloth).

Table 8-4: Proposed Series of Training for Conversion Technology of Abaca Fibers

Topic	Equipment Required	Raw Material
Fiber extraction	Stripping knife and machine	Abaca stalks
Tinagak and Sinamay making	None	High grade fiber
Bleaching, dyeing and weaving	Handloom weaving machine	Tinagak (knotted fiber)
Bleaching, dyeing and scrunch making	Equipments for special uses	Abaca fiber, waste, tip cut fibers
Products development	Sewing machine, etc.	Sinamay or scrunch

Value-added fiber craft products are researched by women's group members with the help of the LGUs' staffs and FIDA to break into markets. Training on abaca processing is conducted until production skills are acquired. The target groups purchase the required equipment such as looming machines and other necessary accessories, and a processing center for production is set up on the basis of a request to the LGUs and cost sharing with the beneficiaries.

6) Monitoring of field activities and effect of training, and evaluation

Municipal Agricultural Officers and Barangay Agricultural Technologist together with FIDA and DAF monitor progress of the activities of the Project to confirm effect of training and necessity of follow-up support if it is needed.

At the end of the pilot phase, evaluation is conducted for applying lesson learned to the next phase. Re-designing of the next phase is required based on the evaluation result if it is necessary. Evaluation team is composed of DAF, FIDA and LGUs. Evaluation is conducted from the view point of the following two aspects. One is to examine managing ability of DAF if it can really manage the next phase. The other one is degree of technology dissemination on abaca enterprises to the beneficiaries.

- Management ability of DAF should be evaluated by checking degree of disbursement of budget allocated for the activities in the pilot phase. Eighty percent of disbursement of the budget should be acceptable to proceed to the next phase; otherwise, causes of the delay of the activities should be discussed. Moreover, information sharing and coordination ability of DAF should also be evaluated by interviewing DAF, FIDA, LGUs and beneficiaries.
- Degree of technology dissemination is examined by observation of farmers' fields, interviewing farmers and examining farming records to know increase of income from abaca. If 70% of the beneficiaries are satisfied with the result on abaca enterprise, the next phase is carried out; otherwise, re-designing of the activities of the next phase is required. On top of that, post-harvest machinery and equipment should be observed if they are fully utilized and maintained well by the beneficiaries. Consolidated groups for conversion of abaca fibers should also be interviewed and their primary processed products from abaca

can be well examined if their products are really accepted by any buyers.

(3) Management Plan

1) Project Management Structure

A summary of the functions of organizations and personnel for project implementation and the relationship among the implementers are presented in Table 8-5 and Figure 8-3.

Table 8-5: Function of Organization and Personnel to Implement the Project

Organizations/Personnel	Function
DAF-ARMM	Performing project management: planning, implementation, and monitoring. Coordinating with other organizations, and instructing subordinate organizations and personnel of the LGUs such as the Province DA, the Municipal Agricultural Officer (MAO), and the Barangay Agricultural Technologist (BAT). It coordinates with other technical partner institutions.
FIDA	It collaborates with DAF-ARMM to manage the project in planning, implementation, monitoring, and evaluation stages in coordination with the LGUs. It is partly in charge of the facilitation and implementation of the project. Technical expertise is sourced from it.
ARMMIARC and ATI	Instructed by DAF-ARMM for extension activities on intercropping or cover-cropping cultivation at the demonstration farms and vermicomposting plots. Lectures are also given for field training and facilitation.
LGUs	The provincial DA staff in agriculture is trained by DAF-ARMM, and the DA staff directs the MAO, who accordingly instructs the BAT for project preparation and implementation. Monitoring reports flow in the reverse direction. Ground level staff of the MAO and the BAT conducts technical support activities for the farmers. This staff is mobilized by FIDA for conducting ground level activities with direct beneficiaries.
SUCs (BUAD Agriculture School and Mindanao State University College of Agriculture)	SUCs provide technical staff and facilities for abaca cultivation and nursery management. Tissue-cultured planting materials are also supplied by SUCs.
Private enterprises	Enterprises producing fiber handicraft products are sourced for the project to show marketed products to the beneficiaries, and they can be business partners for them in future.

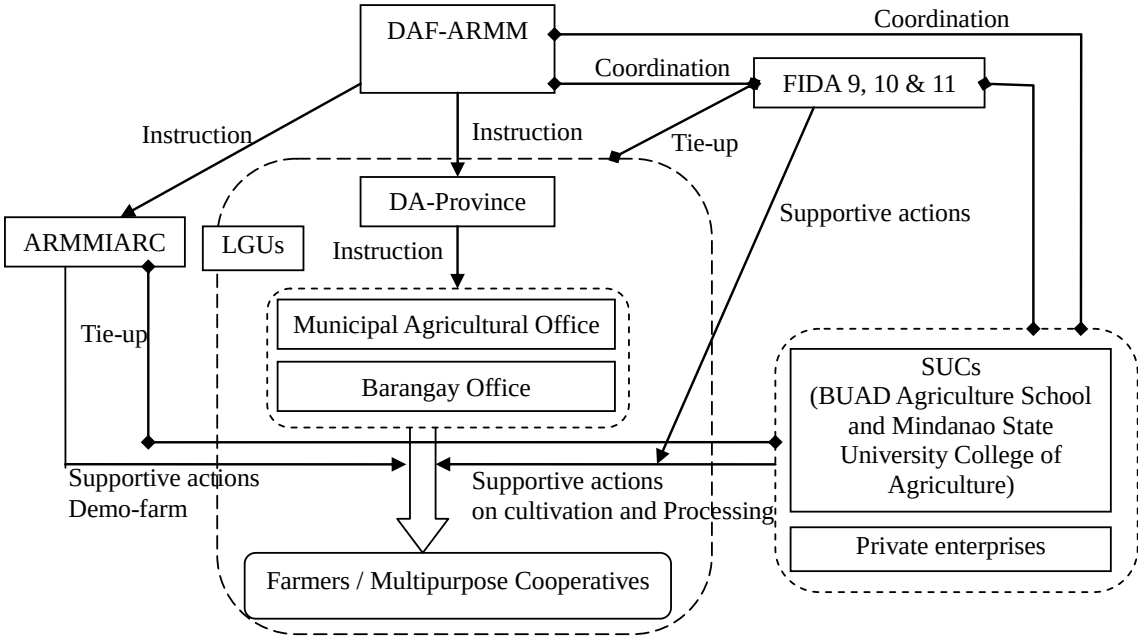


Figure 8-3: Relationship among Implementers of the Project

2) Personnel Plan

A Filipino expert on Project Management is posted in DAF to support project management in collaboration with FIDA, the LGUs, and other stakeholders. Expertise on technical subjects is sourced from FIDA and other public institutions as required. Mindanao State University, BUAD Agriculture School, and Mindanao State University College of Agriculture can also provide experts (Table 8-6).

Table 8-6: Required Expertise in Implementation of the Project

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project Management	1	20 MM	Hired and posted in DAF-ARMM
Assistance	1	20 MM	Hired and posted in DAF-ARMM
Abaca cultivation	1	When required	FIDA/others
Post-harvest technology	1	When required	FIDA/others
Abaca fiber handicraft	1	When required	private sector

(4) Necessary Inputs

The listed facilities and equipment are the items required for performing the activities in the action plan.

1) Facility Plan

Table 8-7 presents the facility plan.

Table 8-7: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks[199]
Demonstration farm	Intercropping or cover-cropping	1.0 ha	Within targeted farmers' fields
Warehouse	Simple structure	200 m^2	Group utilization

2) Equipment Plan

Table 8-8 presents the equipment plan.

Table 8-8: Equipment Plan

Equipment	Specification	Remarks[200]
Computer	Lap top computer	DAF-ARMM, FIDA, and DA Lanao del Sur
Printer	Photocopy and scanning function	DAF-ARMM, FIDA, and DA Lanao del Sur
Vehicles	4WD Pick up	DA Lanao del Sur
Stripping machines	Mobile type with prime mover	Group utilization; it could be supported on the basis of a request to the LGUs and cost sharing with beneficiaries.
Weaving machine	Handloom-weaving machine	Training and production purpose
Sewing machine	Motor powered	Training and production purpose

[199] Facilities and equipment are placed or set in the indicated places in remarks.
[200] Facilities and equipment are placed or set in the indicated places in remarks.

(5) Plan of Operation

Table 8-9 presents the plan of operation, which is divided into two phases.

Table 8-9: Plan of Operation

Activities	Agency	Schedule (Year)									
		Pilot Phase					Expansion Phase				
		1	2	3	4	5	6	7	8	9	10
Pilot Phase (Lanao del Sur province)											
Project preparation	DAF FIDA										
Project management	DAF FIDA										
Holding abaca summit	DAF FIDA LGU SUCs										
Technical instruction to abaca growers	FIDA SUSs LGU										
Improvement of post-harvest processing	FIDA SUCs LGU										
Encouragement of quality assurance awareness	FIDA LGU										
Introduction of conversion technology of fibers	FIDA LGU										
Monitoring of field activities and effects of training	DAF FIDA LGU										
Expansion Phase (Lanao del Sur and 3 island provinces)											
Project preparation	DAF FIDA										
Project management	DAF FIDA										
Holding abaca summit	DAF FIDA LGU SUCs										
Technical instruction to abaca growers	FIDA LGU SUCs										
Improvement of post-harvest processing	FIDA LGU SUCs										
Encouragement of quality assurance	FIDA LGU										

Activities	Agency	Schedule (Year)																			
		Pilot Phase										Expansion Phase									
		1		2		3		4		5		6		7		8		9		10	
awareness																					
Introduction of conversion technology of fibers	FIDA LGU																				
Monitoring of field activities and effects of training	DAF FIDA LGU																				

(6) Estimated Project Cost

Project costs, broken down into personnel cost, facility and equipment cost, operation cost, and training and seminar cost, are roughly estimated and presented in Tables 8-10 to 8-13.

1) Personnel Cost

Table 8-10: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Project Management/Advisor	20 MM	200,000	4,000,000	Posted in DAF-ARMM for pilot phase
Assistance	20 MM	50,000	1,000,000	Posted in DAF-ARMM for pilot phase
Total Cost			5,000,000	

2) Facility and Equipment Cost

Table 8-11: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks[201]
< Pilot Phase >				
Demonstration farm	1.0 ha	200,000 /ha	200,000	To be allocated among supporting organization
Warehouse	200 m^2	3,000/m^2	600,000	Ditto
Computer	3	50,000	150,000	DAF
Printer	3	30,000	90,000	DAF
Stripping machine	2	150,000/unit	300,000	Target groups
Looming machine	2	30,000/unit	60,000	Ditto
Sewing machine (Reconditioned)	2	30,000/unit	70,000	Ditto
Warehouse for processing	200 m^2	3,000/m^2	600,000	Ditto
Total Cost			2,070,000	
< Implementation Phase >				
Stripping machine	5	150,000/unit	750,000	Target groups
Looming machine	5	30,000/unit	150,000	Ditto
Sewing machine (Reconditioned)	5	30,000/unit	150,000	Ditto
Total Cost			1,050,000	Financing service will be provided to the groups with support from the LGUs on the basis of a request from them or their access to financial institutions

[201] Facilities and equipment are placed or set in the indicated places in remarks.

3) Operational Cost

Table 8-12: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Seedlings (tissue cultured)	100	20/seedling	2,000	Obtained from a supporting organization
Seedlings for other crops	100	20/seedlings	2,000	Obtained from a supporting organization
Total Cost			4,000	
< Implementation Phase >				
Seedlings (tissue cultured)	500	20/seedling	10,000	Obtained from a supporting organization
Seedlings for other crops	500	20/seedlings	10,000	Obtained from a supporting organization
Total cost			10,000	Financing service will be provided to groups with support from the LGUs based on a request from them or their access to financial institutions.

4) Training and Seminar Cost

Table 8-13: Training and Seminar Cost[202]

Main Items	Quantity	Unit Cost (Php)	Cost (Php)
< Pilot Phase >			
Abaca summit	3 times	100,000	300,000
Seminar on quality awareness	3 times	100,000	300,000
Abaca cultivation (TOT)	10 participants x 2 times/yr x 1 yr	1,000/day-person	20,000
Post-harvest technology (TOT)	10 participants x 2 times/yr x 1 yr	1,000/day-person	20,000
Abaca cultivation	10 participants x 4 times/yr x 3 yrs	1,000/day-person	120,000
Post-harvest technology	10 participants x 4 times/yr x 3 yrs	1,000/day-person	120,000
Fiber extraction (1day)	2 times x 2 groups	20,000/training	40,000
Tinagak and Sinamay making (2 days with maximum 35 participants)	2 times x 2 groups	35,000/training	140,000
Bleaching, dyeing and weaving (3 days with 35 maximum participants)	2 times x 2 groups	40,000/training	160,000
Bleaching, dyeing and scrunch making (3 days with maximum 15 participants)	2 times x 2 groups	45,000/training	180,000
Products development (3 days with maximum 15 participants)	2 times x 2 groups	40,000/training	160,000
Total Cost			1,560,000
< Implementation Phase >			
Abaca summit	3 times	100,000	300,000
Seminar on quality awareness	3 times	100,000	300,000
Abaca cultivation (TOT)	10 participants x 2 times/yr x 1 yr	1,000/day-person	20,000
Post-harvest technology (TOT)	10 participants x 2 times/yr x 1 yr	1,000/ day-person	20,000
Abaca cultivation	10 participants x 8 times/yr x 3 yrs	1,000/day-person	240,000
Post-harvest technology	10 participants x 8 times/yr x 3 yrs	1,000/ day-person	240,000
Fiber extraction (1day)	2 times x 5 groups	20,000/training	200,000
Tinagak and Sinamay making (2 days with maximum 35 participants)	2 times x 5 groups	35,000/training	350,000
Bleaching, dyeing and weaving (3 days with 35 maximum participants)	2 times x 5 groups	40,000/training	400,000
Bleaching, dyeing and scrunch making (3 days with maximum 15 participants)	2 times x 5 groups	45,000/training	450,000
Products development (3 days with maximum 15 participants)	2 times x 5 groups	40,000/training	400,000
Total Cost			2,920,000

[202] The unit cost for TOT per person in this Table is based on the governmental standard for daily allowances and accommodation.

(7) Collaboration with Other Projects

Related projects or activities are summarized in Table 8-14.

Table 8-14: Related Projects and Activities

Relevant Projects	Agency	Relationship with the Proposed Project Plan
High Value Crops Development Program	DAF-ARMM	Budget allocation for abaca
Production of Organic Fertilizers	CAMSU	Technical collaboration on abaca production
Mushroom Culture	CAMSU	Technical collaboration on by-products utilization
Philippine Military's Balik Baril Program in exchange of abaca seedlings	FIDA	Candidate of site observation
Abaca Expansion Program (Nationwide)	FIDA	Technical information sharing
Abaca Rehabilitation (Nationwide)	FIDA	Technical information sharing
Abaca Planting Materials Production (Implemented in a few selected areas in Lanao del Sur)	FIDA	Collaboration for sullying planting material

8-4-1-2 Cacao

Project Title:
Promotion of Cacao Industry for Small-Scale Farmers in the ARMM

(1) Project Summary

1) Background

The DA has now prioritized cacao as part of the commodities of the High Value Commercial Crop Program because of its market potential and the purpose of the program. This constitutes official recognition of cacao's return to the Philippines as a crop of economic importance and with great expansion potential.

ACDI/VOCA data as of December, 2010 showed 30,000 tons of domestic cacao consumption against 6,000 tons of capacity production. The South East Region for the same year consumed 650,000 tons versus the production of 400,000 tons. Adding to this market potential, cacao, intercropped with coconut, is highly productive, presenting a significant opportunity for households in rural areas.

The ARMM is not, of course, the only region subject to cacao industry expansion, although at present cacao production is extremely limited to certain provinces in the ARMM. Several potential areas for developing cacao cultivation exist in the ARMM, such as Lamitan of Basilan which has already been producing cacao.

Under the said preferable market circumstances, the project will respond to this high-demand market opportunity by empowering farmers to aggressively enter the cacao farming industry by making good quality planting materials available to them. It will also assist them in learning proper crop management and post-harvest technology to ensure that their cacao meets the quality standards required by the market.

2) Target Areas

The most suitable climate for cacao is type IV. Nearly all ARMM areas possess this climate. The ARMM soil condition is also suitable because cacao grows well in clay loam soil. Nevertheless, since cacao production areas are currently limited in the ARMM, cacao producing potential areas should be identified by investigating the intention and willingness of small-scale farmers or existing cooperatives in Maguindanao province to enter the cacao industry.

3) Target Groups

A potential cooperative[203] that plans to start cacao production can be a target as a model case for farmers or cooperatives. In addition, farmers with two to three hectares of farm land, with the capacity to intercrop cacao with other crops like coconut, or cooperatives which are interested in future cacao production will be included in the project. The number of farmers as beneficiaries is 80, all of whom are members of the cooperative.

4) Period

The period of the pilot phase is five years.

5) Project Purpose

The cacao industry is initiated in the ARMM by introducing an appropriate cacao cropping system and post-harvest processing technology to produce and deliver quality cacao beans to markets.

6) Expected Outcome

- DAF can provide farmers with technical advice and other necessary services to begin cacao production.
- One farmers' group or multipurpose cooperative begins cacao production and marketing.

7) Expected Impact

Annual gross income in the 5th year for smallholders is Php 108,000/ha with these assumptions: i) intercropping with coconut, ii) planting density of 600 trees/ha, iii) fermented dry bean productivity of 1,200 kg/ha, iv) 20% loss, and v) selling price of Php 100/kg.

(2) Activities

1) Project preparation and management

DAF is the organization responsible for managing the project. It selects target areas and target groups and conducts the preparatory baseline survey together with the LGUs. DAF performs planning, implementation, monitoring, and evaluation of the project.

In this phase, the management ability of the DAF staff will be strengthened and documentation ability improved. On-the-job training for project management through planning, implementation,

[203] As of April 2011, there is one potential group - KM21 KRISLAM Multi-Purpose Cooperative, Alamada, Sultan Kudarat, Shariff Kabunsuan - in Maguindanao province that plans to begin cacao production depending upon the study result.

monitoring, and evaluation are conducted. To develop technical skills and nurture future trainers for cacao farming and post-harvest processing, intensive technical training (Table 8-15) is provided to technical staffs of DAF, the DA, and the LGUs by SUC, Cacao Trading Center in Davao city, or private enterprises like MARS Cocoa Development Center in Malagos of Calinan District in Davao city.

Table 8-15:
Proposed Intensive Training on Trainers (TOT) by MARS Cocoa Development Center

	Session	Contents/Activities
Day 1	Leveling expectations	Pre-test
	Presentation	Cacao situation Challenges and opportunities
	Participatory discussion	Varieties/pod types/maturity/propagation, and so on Cacao pollination Factors affecting cacao bean quantity and quality Cacao nursery establishment Sexual and asexual propagation
Day 2	Hands-on exercise	Soil-filling of bags Seed propagation and sowing Top grafting
	Lecture	Soil and climatic requirements Field planting, care and maintenance Soil health management Production strategies Cacao harvesting and post-harvest processing Cacao bean grading Clonal rehabilitation and planting combination
Day 3	Field activities and hands on exercise	Field planting Pruning Pests and diseases identification & sleeving Clonal rehabilitation by grafting
	Hands-on and field activities related to post-harvest processing	Harvesting and Pod breaking CPB evaluation Fermentation and Solar drying Sorting/ packaging
	Workshop on cacao seasonal calendar or farm visit	
Day 4	Closing	Participants' response Awarding of certificate

2) Preparation of extension work for cacao production and propagation of seedlings

AF and provincial DA, collaborating with ARMMIARC and ATI, develop an appropriate manual for cacao production and post-harvest processing, particularly on fermentation and drying. ARMMIARC acquires three to five varieties/clones of cacao as planting material (i.e.,

UF-18, BR-25, and PB-123) to establish a budwood garden[204] in ARMMIARC. The garden from which scions can be obtained for nurseries must have well-drained, porous, loamy, fertile, and well-aerated soil. The soil should be high in organic matter necessary to promote satisfactory growth and away from any shade trees. The fence should be barbed wire to protect the crop from wild and stray domestic animals.

Producing high quality cacao beans requires properly nurtured cacao trees. Proper care begins with the selection of planting materials from the right seedling nursery. A nursery is also established in ARMMIARC. The nursery should be situated near the source of the budwood materials needed for vegetative propagation; therefore, proper location arrangements should be planned before establishing this budwood garden and nursery.

3) Training for propagation and cropping system for newly starting cacao production

To enable member farmers of the potential cooperative to produce quality materials by learning different propagation methods for cacao, ARMMIARC, collaborating with ATI, conducts training to introduce proper procedures and required measures for a cacao nursery and scion grove until field planting. To facilitate this training, technical experts are trained as trainers. Smallholder farmers interested in beginning a cacao production are grouped for extension purposes, and learn propagation methods and nursery making through on-site training in ARMMIARC.

Training on the cacao cropping system is provided to the farmers' cooperative members. Roads and drainage construction in farms, land preparation, planting methods, weed and pest control (particularly cacao pod borer prevention), pruning, and pod harvesting are taught while the cacao trees grow. Intercropping is also recommended with coconut, coffee, and fruits; therefore, in ARMMIARC, an intercropping farm is established beside the budwood garden and nursery farm. Several good examples of cacao cropping system in the Davao region are introduced to the beneficiaries through a study tour.

4) Introduction of post-harvest facility and technical instruction for high-quality dried fermented beans

For harvesting and post-harvesting technologies, specific facilities are required for fermentation, drying, and storing; therefore, the candidate cooperative or farmers' group are given the opportunity to observe the post-harvest facilities at the Cacao Trading Center and Subasta

[204] ARMMIARC has already prepared a budwood garden and planted 35 seedlings of UF-18, BR-25, and PB-123 on May 5, 2011. The seedlings were obtained from the Cacao Trading Center, Biao, Talandang, Tugbok district, Davao City.

Integrated Farmers Multipurpose Cooperative in Davao city to learn the appropriate design and size of the facilities. For fabrication of the facilities, locally available materials are used and cost sharing of fabrication is recommended with the LGUs, based on a request from the cooperative.

Technical training on post-harvest processing is provided to the target cooperative and farmers, in collaboration with the Cacao Trading Center and private enterprises such as the MARS Cocoa Development Center. Once the post-harvest facility is set up for the target cooperative, on-the-job training is provided by the experts.

5) Monitoring of field activities and effect of training, and evaluation

The MAOs and the BAT monitor the progress of project activities to confirm the effects of training and of the need, if any, for follow-up support. This monitoring is conducted by a regular monitor trained by DAF, and a standard monitoring sheet is developed for this monitoring process.

At the end of the pilot phase, evaluation is conducted if cacao promotion is carried out further. Evaluation team is composed of DAF and LGUs. Evaluation is conducted from the view point of the following two aspects. One is to examine managing ability of DAF if it can really manage the next phase. The other one is degree of technology dissemination on cacao enterprises to the beneficiaries.

- Management ability of DAF should be evaluated by checking degree of disbursement of budget allocated for the activities in the pilot phase. Eighty percent of disbursement of the budget is acceptable for further promotion of cacao. Moreover, information sharing and coordination ability of DAF should also be evaluated by interviewing DAF, LGUs, private partners and beneficiaries as well.
- Degree of technology dissemination is examined by observation of farmers' field, interviewing farmers and examining farming records to know increase of income from abaca. If 70% of the beneficiaries are satisfied with the result on cacao enterprise, further promotion of cacao can be carried out for other farmers and consolidated organizations. Post-harvest machinery and equipment for fermentation and drying should be observed if they are fully utilized and maintained well by the beneficiaries. Moreover, budwood garden for cacao planting material of DAF should be carefully observed if proper care on the garden is performed by the staff of DAF for further continuation of supplying of planting material of cacao for further promotion.

(3) Management Plan

1) Project Management Structure

DAF performs planning, implementation, and monitoring of the entire project. Major related organizations implementing the activities are ARMMIARC and ATI, SUCs, the Cacao Agribusiness Zone Center in Davao, and the LGUs (provincial DA, the MAO, and the BAT). Their functions are listed in Table 8-16, and relationships among organizations are illustrated in Figure 8-4. The City Agricultural Office of Davao city and MARS Incorporated, etc. will be technical information sources on cacao industry development.

Table 8-16: Function of Organization and Personnel to Implement the Project

Organizations/ Personnel	Function
DAF-ARMM	Performing project management: planning, implementation, and monitoring. Coordinating with other organizations and instructing subordinate organizations and personnel of the LGUs such as the Province DA, the MAO and the BAT.
ARMMIARC/ATI	Instructed by DAF-ARMM for extension activities. Conducting cacao farming, particularly intercropping with coconut and coffee. ARMMIARC prepares the budwood garden and nursery. Lectures are provided for field training and facilitation as well. AMMIARC and ATI technical staff should be trained in all phases of cacao cultivation and post-harvest processing technology at the beginning of the project.
LGUs	DA Provincial staff in agriculture is trained by DAF-ARMM, and the DA staff directs the MAO, who accordingly instructs the BAT for project preparation and implementation. Monitoring reports flow in the reverse direction. The front line level staff of the MAO and the BAT facilitates farmers for technical support activities. The technical staff of the LGUs; however, should be trained in all aspects of cacao cultivation and post-harvest processing technology at the beginning of the project as well.
SUCs (University of Southern Mindanao)	SUC is in the position to provide technical staff and facilities for cacao cultivation, budwood garden, nursery, grafting, intercropping, and so forth. In this case, Philippine Industrial Crop Research Institute of University of Southern Mindanao is the concerned organization.
Cacao Agribusiness Zone Center, MARS Cocoa Development Center, and ACDI/VOCA	The three organizations are resource organizations for technical support and information on cacao production. TOT can be performed in the institutions upon request from DAF-ARMM.

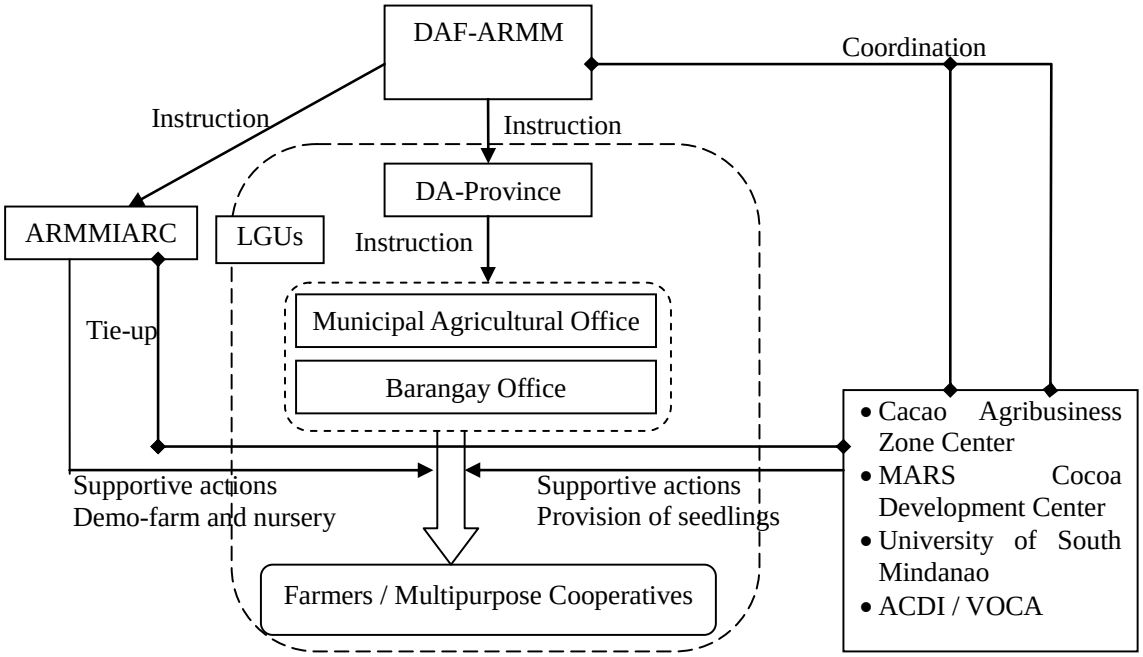


Figure 8-4: Relationship among the Organizations

2) Personnel Plan

This following personnel plan is created for the project (Table 8-17).

Table 8-17: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project management	1	15 MM	Posted in DAF-ARMM
Assistance	1	15 MM	Posted in DAF-ARMM
Cacao cropping system	1	When required	Staff of ARMMIARC / USM
Composting	1	When required	Staff of ARMMIARC / USM
Post-harvest technology	1	When required	USM, Cacao Agribusiness Zone Center, or private sector

A Filipino expert in project management, with expertise in social and economic issues of the ARMM, is posted in DAF to ensure smooth management of the project and to conduct capacity development of DAF through on-the-job training. Other necessary personnel are available from partner organization or outside of the ARMM.

(4) Necessary Inputs

The listed facilities and equipment are the items required for performing the activities (Tables 8-18 and 8-19).

1) Facility Plan

Table 8-18: Facility Plan

Facility	Specification/ Structure	Area/Scale	Purpose
Cacao cropping system demo farm	Cacao-based, with coconut or coffee	0.5 ha	Demonstration in ARMMIARC
Cacao budwood garden	1.5 m x 1.5 m planting density	0.3 ha	Scion supply and demonstration in ARMMIARC
Cacao nursery house	Semi-open type	10 m x 20 m	Seedling nursery and demonstration in ARMMIARC
Composting plots	Vermicompost	10 m^2 x 3 units	Demonstration in ARMMIARC
Fermentation box	Wooden	500 kg of cacao/box	Fermentation of cacao beans
Solar dryer	Vinyl coved, semi-open table type	2 m x 10 m	Drying fermented beans
Grading table	Built-in sieve	0.5 m x 1.0 m of table area	Grading dried fermented beans
Storage	Wooden	3 ton of cacao/container	Storing dried fermented beans in sacks

2) Equipment Plan

Table 8-19: Equipment Plan

Equipment	Quantity	Specification	Purpose
Computer	1	Laptop computer	Documentation in DAF-ARMM
Printer	1	Printer with photocopy function	Documentation in DAF-ARMM
Moisture meter	1	Moisture contents (MC) ranging from 5% to 30%, w.b.	Measurement of Cacao's MC

(5) Plan of Operation

Plan of operation is explained in Table 8-20.

Table 8-20: Plan of Operation

Activities	Agency	Year									
		1		2		3		4		5	
Project preparation and management	DAF LGU										
Preparation of extension work for cacao production and propagation of seedlings	DAF LGU										
Training for propagation and cropping system for starting cacao farmers	DAF LGU										
Introduction of post-harvest facility and technical instruction for quality dried fermented beans	DAF LGU										
Monitoring of field activities and effects of training	DAF LGU										

(6) Estimated Project Cost

Project costs are roughly estimated as follows.

1) Personnel Cost (Table 8-21)

Table 8-21: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Project management/ Advisor	15 MM	200,000	3,000,000	Posted in DAF-ARMM for pilot phase
Assistance	15 MM	50,000	750,000	Posted in DAF-ARMM for pilot phase
Total Cost			3,750,000	

2) Facility and Equipment Cost (Table 8-22)

Table 8-22: Facility and Equipment Cost

Main items	Quantity	Unit Cost（Php）	Cost（Php）	Remarks[205]
Cacao cropping system demo farm	0.5 ha	200,000/ha	100,000	ARMMIARC
Nursery farm including Cacao budwood	0.3 ha	500,000/ha	250,000	ARMMIARC
Composting plot	10 m^2 x 3	5,000/10m^2	15,000	ARMMIARC
Fermentation box	4	15,000/box of 250 kg of cacao	60,000	Cooperative
Semi-open type solar dryer	1	12,000/unit of 18m^2 of drying area	12,000	Cooperative
Grading table	1	1,000/unit of 2 m^2 of grading area	1,000	Cooperative
Storage	1	12,000/34 bags of cacao	12,000	Cooperative
Moisture meter	1	110,000	110,000	Cooperative
Total Cost			560,000	Financing service will be provided to groups with support from the LGUs based on a request from them or their access to finance institutions.

3) Operational Cost (Table 8-23)

Table 8-23: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Seedlings of cacao (5 varieties, 6 months)	100 seedlings	25/seedling	2,500	For demo farm in ARMMIARC
Seedlings of cacao (5 varieties, 6 months)	100 seedlings	25/seedling	2,500	For budwood garden in ARMMIARC
Earthworms	10 kg	250/kg	2,500	For composting plot demo in ARMMIARC
Total Cost			7,500	

[205] Facilities and equipment are placed or set in the places indicated in the remarks.

4) Training and Seminar Cost (Table 8-24)

Table 8-24: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)
Training on cacao cropping system for technical staff of DAF and the LGUs	5 participants x 5 days x 4 times x 1 year	1,000/day-person	100,000
Training on post-harvest processing for technical staff of DAF and the LGUs	5 participants x 5 days x 4 times x 1 year	1,000/day-person	100,000
Training on cacao cropping system for members of cooperatives	5 participants x 5 days x 4 times x 4 years	1,000/day-person	400,000
Training on post-harvest technology for members of cooperatives	1 cooperative (5 participants) x 5 days x 4 times x 3 years	1,000/ day-person	300,000
Study tour for DAF and the LGUs	5 participants x 2 days x 4 times x 1 year	3,000/day-person	120,000
Study tour for cooperatives	1 cooperative (5 participants) x 2 days x 4 times x 3 years	3,000/day-person	120,000
Total Cost			1,140,000

(7) Collaboration with Other Projects

Related projects or activities are summarized in Table 8-25.

Table 8-25: Related Projects and Activities

Relevant Projects	Agency	Relationship with the Proposed Project Plan
Sustainable Cocoa Enterprise Solutions for Smallholders[206]	ACDI/VOCA	Collaboration on information exchange and study tour

[206] Funding is from United States Department of Agriculture (USDA) in partnership with the Cocoa Foundation of the Philippines (CocoaPhil), World Cocoa Foundation (WCF) and MARS Inc.

8-4-1-3 Cassava

Project Title:
Cassava Production and Processing Development to Improve Small-Scale Farmers' Standard of Living in the ARMM

(1) Project Summary

1) Background

In 2011, the DA recognized root crops as high value crops. Cassava is recognized as one of the important commodities as a staple or staple supplement food and raw material for homemade delicacies like cassava chips, cassava cakes, cassava pie, and cassava pudding throughout the country. In Mindanao alone, approximately 30 different preparations of grated cassava are thought to exist.

However, home-made cassava confections produced in the ARMM has not yet tapped a wide market and is still confined in rural areas. They are traditionally prepared using fresh grated cassava, which is highly perishable, limiting the time frame for reaching urban markets. As a result, processed cassava products have been confined only in the rural areas where it is grown. Therefore, coping with conventional post-harvest and processing technologies and cultivation improvement are major issues for stimulating cassava production and cassava-based food processing industry.

For cassava cultivation, extensive conventional cultivation management is practiced in the ARMM, resulting in erratic production. This is caused primarily by poor fertilization when turning to crop rotation from corn. In addition, farmers use older varieties of cassava from their own harvest.

The project intends to stimulate the cassava food industry by efficient and effective utilization of the commodity through improving cultivation and implementing appropriate post-harvest technology. It further introduces value-added processing products to rural producers in order to expose them to greater opportunities for income generation.

2) Target Areas

Three LGUs in island provinces of Basilan, Sulu, and Tawi-Tawi are the target areas during the pilot phase, and five LGUs in Lanao del Sur and the above three provinces are the targets for the

expansion phase as listed in Table 8-26.

Table 8-26: Number of Target Areas

Phase	Number of Target LGUs	Provinces
Pilot Phase	3	Basilan, Sulu, Tawi-Tawi
Expansion Phase	5	Lanao del Sur, Basilan, Sulu, Tawi-Tawi

3) Target Groups

Small-scale cassava farmers with a farming area of not more than 1.0 ha and who specifically practice subsistence farming under resource-constraints are targeted for support in cassava cultivation. Potential farmers' groups and/or women's groups are also targeted for introducing the processing of cassava-based food or confections (Table 8-27).

Table 8-27: Number of Target Groups

Phase	Number of Target Farmers	Number of Target Groups and Women's Groups
Pilot	80 (3 LGUs)	3 (1 x 3 LGUs)
Expansion	200 (5 LGUs)	5 (1 x 5 LGUs)

4) Period

The 10-year Project is divided into two phases: a pilot phase for three years and an expansion phase for seven years.

5) Project Purpose

To improve small-scale farmers' standard of living through improvement of cassava cultivation and cassava-based value added processing activities.

6) Expected Outcome

- DAF can manage the project cycle (planning, implementation, monitoring, and evaluation) and perform documentation.
- Seventy percent of cassava farmers technically supported by the project can conduct appropriate cassava cultivation with crop rotation or intercropping with diversified crops, and increase yield.
- At least three cooperatives/women's groups start newly developed cassava based processed products enterprises (e.g., cassava cake, cassava chips, cassava pie, and cassava pudding) as income generation activities.

7) Expected Impact

Annual gross income from cassava for the purpose of raw material supply for starch is about Php 90,000 with the following assumption[207]: i) total roots yield is 32,000 kg/ha, ii) yield of dried cassava chips is 12,800kg/ha with 40% recovery, and iii) farm gate price at 7.00/kg at assembler point.

(2) Activities

1) Project Preparation and management

DAF, together with other related organizations, is responsible for managing the project, including its planning, implementation, monitoring, and evaluation. They select the target LGUs and groups and conduct the base line survey for preparation.

2) Dissemination of appropriate cassava cropping system and cultural management

As preparation before extension activities, intensive training is provided for the improvement of technical skills in cassava production for technical staff members of ARMMIARC and the target LGUs at the Philippines Root Crops Research and Training Center (PhilRootcrops) situated at Visayas State University in Visca of Baybay City, Leyte. Details of the training are listed in Table 8-28.

Table 8-28: Contents and Duration of Cassava Production Technology Training

Training Contents	Duration (days)
- Site selection - Land preparation - Variety selection and preparation of planting materials - Planting, weeding, fertilizer application, and harvesting - Cost and return analysis	2

A demonstration farm showing steps from planting to harvesting is prepared in ARMMIARC as a center for extension. Several recommended varieties[208] are also cropped. High yield planting methods and appropriate varieties for intended purposes are selected[209] to make the farmers aware of better tactics.

Intercropping with corn and/or crop rotation with corn can be displaced. For example,

[207] This is indicated by San Miguel Foods, Inc., Agribusiness Development and Operations Group, South Mindanao Operations, in May 2011.
[208] Result of cassava cultivation by use of tissue cultured planting material can be applied as a part of demonstration as well.
[209] High yielding varieties are VC-1, VC-2, VC-3, Datu, Lakan, or Golden Yellow for starch and Lakan or Golden Yellow for only food or feed.

introducing a cropping system can involve planting maize first and then planting cassava 20 to 30 days later between the rows of maize or between every other maize row (intercropping). Maize is harvested four months later, while the cassava for starch is harvested 10–12 months after planting. For edible cassava with a short growing period of less than 7 months, intercropping with long-term harvest cash crops such as coffee can be demonstrated. Leguminous crop cultivation or compost application after harvesting can also be examples of a soil fertility recovery tactic. Such cropping practices offer producers a better cash flow and returns than those earned by growing cassava. In addition, they significantly reduce the risk of crop failure.

For efficient extension, cassava farmers' groups are formulated and core farmers are selected from the farmers to disseminate cassava cultivation knowledge of intercropping or crop rotation methods through demonstrations established in the core farmer's fields to provide a Farmer Field School guided by technical staff of ARMMIARC and the LGUs. They instruct the target farmers on cassava production technology at ARMMIARC's demonstration farm, while considering the condition of the target farmers' fields.

3) Post-harvest technology improvement

The right harvesting timing and method, efficient post-harvest technology, and proper storing are also taught to prolong the shelf life of harvested cassava and improve and maintain quality of raw materials for processed food or starch.

For demonstrating the improved post-harvest technology, a set of simple post-harvest machinery is provided to ARMMIARC. The machines are peeler and washer, grater, presser, mill, and others; however, selection of machinery should be carefully considered to ensure its suitability to farmers' conditions in the ARMM for demonstration. Technical staff members of ARMMIARC and the LGUs are trained in post-harvest technology, using the appropriate machinery, in workshops conducted by experts from PhilRootcrops. The TOT includes not only practical operation of the post-harvest processing apparatus but also lectures on the quality of raw material, shelf life of products, market value, and so forth. Finally, the target groups of cassava farmers are provided post-harvest training at the ARMM demonstration site by the technical staff. The same training contents are provided to the beneficiaries through practice and lectures. Processing into dried grates and/or flour may be included in this post-harvest training.

4) Introducing small-scale value-added cassava processing

Potential farmers' groups or women's groups are guided to produce value-added processed

cassava foods, such as fried chips, cake, and pie, which are gaining popularity in the country's urban areas.

The groups, along with experts from the Department of Science and Technology-ARMM (Hereinafter called DOST), then visit certain processing sites of the said value-added products in urban areas (Cotabato, Zamboanga, and Davao cities) in Mindanao to acquire the fundamental concepts of marketable, non-traditional processed foods.

Training in processing is provided to the groups by PhilRootcrops, as stated in Table 8-29. The trained groups request the LGUs' support in acquiring equipment and facilities with cost sharing if they agree to start producing the value-added products. During the production stage, experts for DOST monitor production activities and provide technical guidance to the groups to ensure accreditation of quality standards accepted by the market

Table 8-29: Contents and Duration of Cassava Processing Training

Training Contents	Duration (days)
- Quality evaluation of raw materials - Processing techniques of fried cassava, cakes, and bakery products - Equipment design and selection - Small-scale processing plant layout - Evaluation of finished products - Packaging and marketing of products	5

5) Monitoring of field activities and effects of training, and evaluation

The MAOs and the BAT monitor the front-line activities of the project. The monitoring team observes the effects of training in order to inform the project if follow-up support is needed. Monitoring is conducted by a trained regular staff of DAF, and a standard monitoring sheet is developed for this monitoring process.

At the end of the pilot phase, evaluation is conducted for applying lesson learned to the next phase. Re-designing of next phase is required based on the evaluation result if it is necessary. Evaluation team is composed of DAF, LGUs and relevant organizations of the ARMM government. Evaluation is conducted from the view point of the following two aspects. One is to examine managing ability of DAF if it can really manage the next phase. The other one is degree of technology dissemination on cassava enterprises to the beneficiaries.

- Management ability of DAF should be evaluated by checking degree of disbursement of budget allocated for the activities in the pilot phase. Eighty percent of disbursement of the

budget should be acceptable in order to proceed to the next phase; otherwise, causes of the delay of the activities should be discussed. Moreover, information sharing and coordination ability of DAF should be evaluated by interviewing DAF, LGUs, other relevant organizations like PhilRootcrops, and the beneficiaries.

- Degree of technology dissemination is examined by observation of farmers' field, interviewing farmers and examining farming records to know increase of income from cassava enterprises. If 70% of the beneficiaries are satisfied with the result on cassava enterprise, the next phase is carried out; otherwise, re-designing of the activities of the next phase is required. On top of that, post-harvest machinery and equipment for demonstration should be observed if they are fully utilized and maintained well by DAF. Products of value added processing from cassava are to be carefully examined if they are well accepted by consumers.

(3) Management Plan

1) Project Management Structure

DAF performs planning, implementation, and monitoring of the entire project. Major related organizations to implement the activities are ARMMIARC, the LGUs (provincial DA, the MAO, the BAT), PhilRootcrops, and DOST. Their functions are listed in Table 8-30, and relationships among organizations are illustrated in Figure 8-5.

Table 8-30: Functions of Organizations and Personnel to Implement the Project

Organizations/ Personnel	Function
DAF-ARMM	Performing project management; planning, implementation, and monitoring. Coordinating with other organizations, and instructing subordinate organizations and personnel of the LGUs like provincial DA, the MAO, and the BAT.
ARMMIARC	Instructed by DAF-ARMM for extension activities on cassava cropping and post-harvest technology. Demonstration farm and post-harvest equipment are tools for extension. Lectures are conducted for field training and facilitation. Tissue-cultured planting materials are propagated in ARMMIARC as an outlet of PhilRootcrops.
LGUs	The provincial DA staff in agriculture is trained by DAF-ARMM, and the DA staff directs the MAO, who accordingly instructs the BAT for project preparation and implementation. Monitoring reports flow in the reverse direction. Ground level staff of the MAO and the BAT facilitates farmers for technical support activities.
PhilRootcrops	DAF-ARMM coordinates with PhilRootcrops for any activities for cassava cultivation, post-harvest technology, and processing when technical issues arise. PhilRootcrops can provide expertise, facilities, and training for relevant activities in the project.
DOST/DOH	It coordinates with DAF-ARMM for any technical activities for food processing, quality control, hygienic issues, and so on.

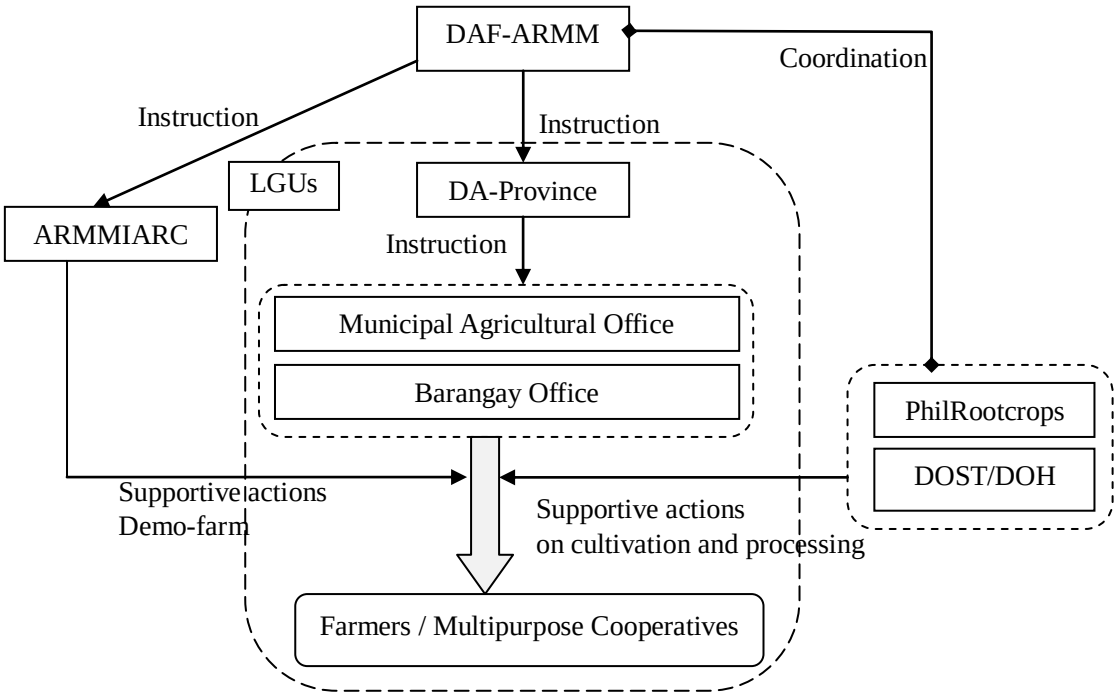


Figure 8-5: Relationship among Implementers of the Project

2) Personnel Plan

A Filipino expert on project management is posted in DAF to support project management. Expertise on technical subjects is outsourced from ARMMIARC, PhilRootcrops, and other public institutions as needed (Table 8-31).

Table 8-31: Required Expertise in the Implementation of the Project

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project management/Advisor	1	15 MM	Posted in DAF-ARMM
Assistance	1	15 MM	Posted in DAF-ARMM
Cassava cultivation	1	When required	ARMMIARC/PhilRootcrops
Post-harvest technology	1	When required	PhilRootcrops
Processing	1	When required	PhilRootcrops/DOST

(4) Necessary Inputs

The listed facilities and equipment are the items required for performing the activities in the action plan (Tables 8-32 and 8-33).

1) Facility Plan

Table 8-32: Facility Plan

Facility	Specification/ Structure	Area/ Scale	Remarks
Cassava cultivation demo farm (intercropping)	Cassava and recommended crops	0.5 ha	Demonstration in ARMMIARC
Composting plots	Vermicompost	10 m^2 x 3	Demonstration in ARMMIARC
Cassava cultivation demo farm (intercropping)	Coconut trees and recommended crops	0.5 ha	Demonstration in core farmers' farm
Composting plots	Vermicompost	10 m^2 x 1	Demonstration in core farmers' farm
Small-scale processing house	Processing building and equipment		Financing service is provided to the target groups with support from the LGUs based on their request.

2) Equipment Plan

Table 8-33: Equipment Plan

Equipment	Quantity	Specification	Purpose
Computer	1	Laptop computer	Documentation in DAF-ARMM
Printer	1	Printer with photocopy function	Documentation in DAF-ARMM
Peeler and washer	1	Motorized with 500 kg/h of work rate	Demonstration in ARMMIARC
Grater	1	Motorized with 200 kg/h of work rate	Demonstration in ARMMIARC
Pressers	1	5 kg/batch of work capacity	Demonstration in ARMMIARC
Mill finisher	1	Motorized with 100 kg/h of work capacity	Demonstration in ARMMIARC

(5) Plan of Operation

Table 8-34 shows the plan of operation which is divided into two phases.

Table 8-34: Plan of Operation

Activities	Agency	Schedule (Year)																	
		Pilot Phase			Implementation Phase														
		1		2		3		4		5		6		7		8		9	10
Pilot Phase (Basilan, Sulu, Tawi-Tawi)																			
Project preparation	DAF																		
Project management	DAF																		
Dissemination of appropriate cassava cropping system and cultural management	DAF LGUs																		
Post-harvest technology improvement	DAF LGUs																		
Introducing small-scale value added cassava processing	DAF DTI																		
Monitoring of field activities and effects of training	DAF LGUs																		
Expansion Phase (Basilan, Sulu, Tawi-Tawi, Lanao del Sur))																			
Project preparation	DAF																		
Project management	DAF																		
Dissemination of appropriate cassava cropping system and cultural management	DAF LGUs																		
Post-harvest technology improvement	DAF LGUs																		
Introducing small-scale value-added cassava processing	DAF DTI																		
Monitoring of field activities and effects of training	DAF LGUs																		

(6) Estimated Project Cost

Project costs are roughly estimated as follows (Tables 8-35 to 8-39).

1) Personnel Cost

Table 8-35: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Project Management	15 MM	200,000	3,000,000	Posted in DAF-ARMM for pilot phase
Assistance	15 MM	50,000	750,000	Posted in DAF-ARMM for pilot phase
Total Cost			3,750,000	

2) Facility and Equipment Cost

Table 8-36: Facility and Equipment Cost

Main Items	Quantity	Unit Cost（Php）	Cost（Php）	Remarks[210]
< Pilot Phase >				
Intercropping demo farm	0.5 ha	200,000/ha	100,000	ARMMIARC
Composting plot	10 m^2 x 3	5,000/10m^2	15,000	ARMMIARC
Computer	1	50,000	50,000	DAF-ARMM
Printer	1	30,000	30,000	DAF-ARMM
Intercropping demo farm	0.5 ha	200,000/ha x 3	300,000	Core farmers' farm in 3 LGUs
Composting plots	10 m^2 x 3	5,000/10m^2	15,000	Core farmers' farm in 3 LGUs
Peeler and washer	1	85,000	85,000	ARMMIARC
Grater	1	45,000	45,000	ARMMIARC
Pressers	1	30,000	30,000	ARMMIARC
Mill finisher	1	120,000	120,000	ARMMIARC
Total Cost			2,010,000	
< Implementation Phase >				
Peeler and washer	5	85,000	425,000	5 groups
Grater	5	45,000	225,000	5 groups
Presser	5	30,000	150,000	5 groups
Mill finisher	5	120,000	600,000	5 groups
Processing building and equipment	5	300,000	1,500,000	5 groups
Total Cost			2,900,000	Financing service will be provided to groups with support from LGUs based on their request or their access to finance institutions

[210] Facilities and equipment are placed and set in the places indicated in the remarks.

3) Operational Cost

Table 8-37: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Planting materials (stem cutting)	For 0.5 ha	11,000/ha	5,500	For demo farm in ARMMIARC
Other crops seedlings	100 seedlings	30/seedling	3,000	For demo farm in ARMMIARC
Earthworms	10 kg	250/kg	2,500	For composting plot demo in ARMMIARC
Planting materials (stem cutting)	For 1.5 ha	11,000/ha	16,500	Core farmers' farm in 3 LGUs
Other crops seedlings	100 seedlings	30/seedling x 3	9,000	Core farmers' farm in 3 LGUs
Earthworms	10 kg	250/kg x 3	7,500	Core farmers' farm in 3 LGUs
Total Cost			44,000	
< Implementation Phase >				
Planting materials (stem cutting)	For 2.5 ha	11,000/ha	27,500	Core farmers' farm in 5 LGUs
Other crops seedlings	100 seedlings	30/seedling x 5	15,000	Core farmers' farm in 5 LGUs
Earthworms	10 kg	250/kg x 5	12,500	Core farmers' farm in 5 LGUs
Total cost			55,000	Financing service will be provided to groups with support from LGUs based on their request or their access to finance institutions.

4) Training and Seminar Cost

Training is divided into two categories: Training of Trainers (TOT) and Training of Farmers.

Table 8-38: Cost Break-Down of TOT

Main Items	Quantity	Unit cost (Php/participant)	Cost
< Pilot Phase >			
Cassava Production Technology	5 staff of ARMMIARC and 10 participants x 3 LGUs	2,500	87,500
Total Cost			87,500
< Implementation Phase >			
Cassava Production Technology	10 participants x 5 LGUs	2500	125,000
Total Cost			125,000

Table 8-39: Cost Break Down of Training for Farmers and Groups for Food Processing

Main Items	Quantity	Unit Cost (Php)	Cost (Php)
< Pilot Phase >			
Training on cassava production technology	10 participants x 5 days x 4 times x 2 years	1,000/day-person	400,000
Training on post-harvest technology	10 participants x 5 days x 4 times x 2 years	1,000/ day-person	400,000
Training on food processing	30 participants (10 x 3 groups) x 2 times	2,500/person	150,000
Total Cost			950,000
< Implementation Phase >			
Training on cassava production technology	10 participants x 5 days x 4 times x 5 years	1,000/day-person	1,000,000
Training on post-harvest technology	10 participants x 5 days x 4 times x 2 years	1,000/ day-person	1,000,000
Training on food processing	50 participants (10 x 5 groups) x 2 times x 4 years	2,500/person	1,000,000
Total Cost			3,000,000

(7) Collaboration with Other Projects

Related projects or activities are summarized in Table 8-40.

Table 8-40: Related Projects and Activities

Relevant Projects	Agency	Relationship with the Proposed Project Plan
Adaptability test of cassava varieties[211]	ARMMIARC DAF-ARMM	Appropriate varieties can be recommended and provided to the project as per results of the test
Research on the effects of organic fertilization on different varieties of cassava	ARMMIARC DAF-ARMM	Appropriate organic fertilizer application can be recommended following research results.
Training farmers on cassava production	ARMMIARC DAF-ARMM	Collaboration with the project activities

[211] Varieties of cassava for food are Rayong 5, CV 35, CV 39, CV 40, Silal, Golden Yellow, Lakan 1, and Lakan 2. Those for starch and feed are Sultan and KU 50, respectively.

8-4-1-4 Coconut

Project Title:

The Appropriate Coconut-based Intercropping Farming and Value-Added Processing for Improvement of Small-Scale Farmers' Standard of Living in the ARMM

(1) Project Summary

1) Background

The coconut tree is called the Tree of Life. However, coconut copra production for oil is stagnant and the opportunities to produce many value-added processed products have not been activated in the ARMM yet. Coconut can be a trunk crop for intercropping of crop diversification, which is not fully implemented in the ARMM. Integrated activities of coconut-based intercropping for crop diversification and development of the growing coconut processing industry, manufacturing products like coconut sugar, can stimulate the coconut industry and boost the ARMM economy in the long term.

2) Target Areas

Target areas are existing coconut producing areas, and the senile coconuts areas are to be rehabilitated by replanting in five provinces. In the pilot phase, for three years, Maguindanao province will be the target province. The other four provinces will be added in the expansion phase, which will run for seven years, on the basis of the result of the previous phase. The number of the LGUs for the action plan is tabulated as follows (Table 8-41).

Table 8-41: Number of the LGUs to Be Selected in Pilot and Expansion Phases in Action Plan

Phase	Value Added Processing	Coconut-based Intercropping
Pilot Phase (3 years)	1 (Maguindanao)	3 (Maguindanao)
Expansion Phase (7 years)	5 (5 provinces)	15 (5 provinces)

3) Target Groups

Small-scale coconut farmers with a farm land of 0.5 ha–5.0 ha are targeted for intercropping. They may have already begun coconut-based intercropping for crop diversification; however, those who need instruction on appropriate intercropping methods to maximize income opportunity, considering soil and climate conditions, can be prioritized as the target groups. Multipurpose cooperatives that may consider coconut processing or that have already planned coconut processing enterprises can be the target groups for processing in Maguindanao province

in the pilot phase. The number of beneficiaries in both pilot and expansion phases are tabulated below (Table 8-42).

Table 8-42:
Number of Cooperatives and Farmers to be selected in Pilot and Expansion Phases

Phase	Value Added Processing	Coconut-based Intercropping
Pilot Phase	1 co-op in 1 LGU (Maguindanao)	250 farmers in 3 LGUs (Maguindanao)
Expansion Phase	5 coops in 5 provinces	625 farmers in 5 provinces

4) Period

The project is divided into two phases: pilot and expansion. The period of the pilot phase as a verification phase is three years in one province. The expansion phase in each province is planned for seven years.

5) Project Purpose

To improve small-scale farmers' standard of living through coconut-based intercropping and value added processing activities.

6) Expected Outcome

- DAF can manage the project cycle (planning, implementation, monitoring, and evaluation) and perform documentation.
- Seventy percent of coconut farmers technically supported by the project can conduct appropriate coconut-based intercropping with diversified crops.
- At least three cooperatives begin value added processing businesses (e.g., sugar, syrup, and so on).

7) Expected Impact

- Annual income of coconut-growing smallholders increases and exceeds Php 250,000 annually.
- Coconut sugar processing from 5 ha yields an average annual net profit of Php 200,000[212] for ten years, with the following assumptions: i) Two liters of coconuts sap is produced per tree, ii) 500 trees are planted per ha, iii) 1,000 liter sap is used to produce 118 kg sugar, and iv) 118 kg of sugar is produced daily.

[212] Profitability Analysis (No. 12/2010): Coconut Sap Sugar production Module; Philippines Council for Agriculture, Forestry, and Natural Resources Research and Development; Department of Science and Technology; 2010.

(2) Activities

1) Project preparation and management

DAF is the organization responsible to manage the project, coordinating with PCA-14-ARMM. They select target areas and target groups and conduct the preparatory baseline survey. DAF performs planning, implementation, monitoring, and evaluation of the project.

2) Extension of appropriate coconut-based intercropping with recommended crops

ARMMIARC conducts appropriate coconut-based intercropping with other recommended crops for diversification, with a demonstration farm and composting plots prepared in ARMMIARC in the pilot phase. Farmers' groups are planned for efficient extension, and then core farmers are selected during both pilot and expansion phase.

Demonstration farm for intercropping and the composting plots are also prepared in the core farmers' farms. The Farmer Field School extension method is applied to demonstrate and teach the appropriate farming practices at crops' important growth stages.

3) Accelerating fertilization of coconut and re-planting of appropriate variety

The accelerated fertilization method recommended by the PCA to the groups selected for the said extension of intercropping is of using salt. Senile coconut trees are to be replanted with variety[213] suitable for harvesting coconut sap. This activity can be coordinated with the salt fertilization project.

4) Dissemination of coconut-based processing technology

For the pilot phase, multipurpose cooperatives with existing plans to begin businesses for coconut related processing are selected by the PCA for a series of training sessions to produce value-added processed products specifically from coconut sap (Table 8-43). They are trained in food processing and quality control, and eventually they produce processed products to sell by obtaining sales licenses. The main contents of coconut sugar processing training are tabulated in the next table. In the expansion phase, based on beneficiaries' requests, a coconut sugar processing facility is established by cooperatives to begin full processing with support from the LGUs and capitalization from financial institutions.

[213] i.e., Dwarf type.

Table 8-43: Contents of Coconut Sap Sugar Processing Training

Topic	Main Contents
Selection of tree and mature inflorescence for tapping	- Selecting bearing trees with healthy unopened inflorescence - Preparation for collecting sap
Collection of coconut sap	- Cutting inflorescence and method of sap collection - Avoiding fermentation of sap
Heat evaporation	- Boiling sap and removing scum and water, leaving sugar content of the sap
Conversion of sap syrup to coconut sap sugar	- Stirring sap syrup while heating - Converting sap syrup to granules
Sieving and drying	- Cooling down and breaking the lump - Sieving for uniform sugar granules - Curing for equal moisture contents
Weighing and packaging	- Storing overnight - Weighing and packing in plastic bags

5) Monitoring of field activities and effects of training, and evaluation

The MAOs and the BAT monitor the progress of coconut-based intercropping and sugar processing to confirm the effects of training in order to inform the project if follow-up support is needed. This monitoring is conducted by a trained regular staff of DAF, and a standard monitoring sheet is developed for this monitoring process.

At the end of the pilot phase, evaluation is conducted for applying lesson learned to the next phase. Re-designing of the next phase is required based on the evaluation result if it is necessary. Evaluation team is composed of DAF, PCA, and LGUs. Evaluation is conducted from the view point of the following two aspects. One is to examine managing ability of DAF if it can really manage the next phase. The other one is degree of technology dissemination on intercropping of coconut and value added processing to the beneficiaries.

- Management ability of DAF should be evaluated by checking degree of disbursement of budget allocated for the activities in the pilot phase. Eighty percent of disbursement of the budget should be acceptable in order to proceed to the next phase; otherwise, causes of the delay of the activities should be discussed. Moreover, information sharing and coordination ability of DAF should be evaluated by interviewing DAF, LGUs, other relevant organizations of ARMM government, SUC, and beneficiaries.
- Degree of technology dissemination is examined by observation of farmers' field, interviewing farmers and examining farming records to know increase of income from coconut enterprises. Especially, intercropping of coconut and other crops for diversification should be well observed and examined. If 70% of the beneficiaries are satisfied with the result on coconut enterprises, the next phase is carried out; otherwise, re-designing of the

activities of the next phase is required. On top of that, processing facilities and equipment should be observed if they are fully utilized and maintained well by the beneficiaries. Value added processed products like coconut sugar is also examined if the quality is well accepted by consumer side.

(3) Management Plan

1) Project Management Structure

DAF performs planning, implementation, and monitoring of the entire project. Major related organizations implementing the activities are ARMMIARC, PCA-14-ARMM, SUCs, PCA Carmen and others, DTI, DOST, RBOI, CDA, and the LGUs (provincial DA, the MAO, the BAT). Their functions and the relationships among organizations are described in Table 8-44 and Figure 8-6.

Table 8-44: Functions of Organizations and Personnel to Implement the Project

Organizations/ Personnel	Function
DAF-ARMM	Performing project management: planning, implementation, and monitoring. Coordinating with other organizations, and instructing subordinate organizations and personnel of the LGUs such as the provincial DA, the MAO and the BAT.
ARMMIARC	Instructed by DAF-ARMM for extension activities on coconut-based integrated farming with recommended crops at the demonstration farm, nursery, and demonstration vermicomposting plots. Lectures are also provided for field training and facilitation.
LGUs	The DA provincial staff in agriculture is trained by DAF-ARMM, and the DA staff directs the MAO, who accordingly instructs the BAT for project preparation and implementation. Monitoring reports flow in the reverse direction. Ground level staff of the MAO and the BAT facilitates farmers for technical support activities.
PCA	DAF-ARMM coordinates with PCA-14-ARMM for any coconut project activities. The PCA instructs PCA province and PCA municipality to cooperate with DA-province for technical activities at ground level. The PCA-14-ARMM then coordinates with PCA Carmen for cacao processing training, using its staff and facilities. PCA province and PCA municipality under the instruction of PCA-14-ARMM supply seedlings for rehabilitation of senile coconut trees and conduct salt fertilization.
DTI, DOST, RBOI, CDA	These coordinate with DAF-ARMM for technical activities for coconut processing, quality control, licensing, cooperative strengthening, and consultation for capitalization.
SUC	SUC provides technical staff and facilities for intercropping, composting, food processing, and so on, supplementing technical training activities, together with ARMMIARC and PCA's organizations. In this case, the University of Southern Mindanao is the concerned organization.

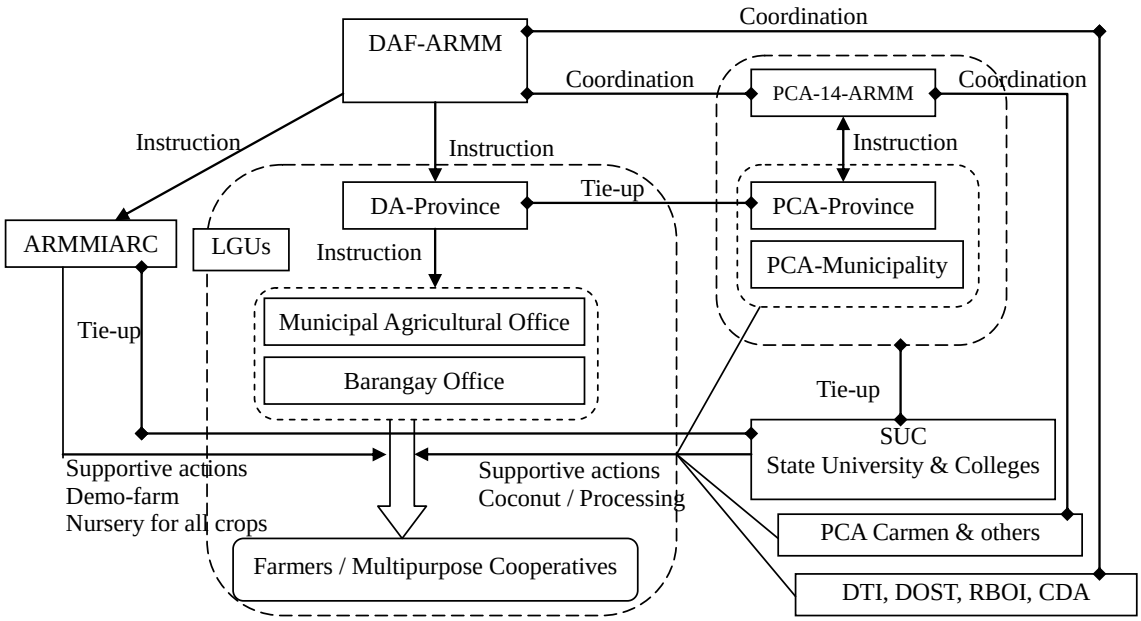


Figure 8-6: Relationship among the Organizations and Personnel

2) Personnel plan

A Filipino expert in project management, with expertise in social and economic issues of the ARMM, is posted in DAF to ensure smooth project management and to conduct DAF's capacity development through on-the-job training in the pilot phase. Other necessary personnel are available from partner organizations of or external to the ARMM (Table 8-45).

Table 8-45: Required Expertise in Implementation of the Project

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project management	1	18 MM	Posted in DAF-ARMM
Assistance	1	18 MM	Posted in DAF-ARMM
Intercropping farming	1	When required	Staff of ARMMIARC
Composting	1	When required	Staff of ARMMIARC/SUC
Coconut farming	1	When required	Staff of PCA
Food processing of coconut	1	When required	Staff of PCA Carmen
Quality control	1	When required	Staff of DOST

(4) Necessary Inputs

The listed facilities and equipment are the items required for performing the activities in the action plan (Tables 8-46 and 8-47).

1) Facility Plan

Table 8-46: Facility Plan

Facility	Specification / Structure	Area/Scale	Remarks
Intercropping demo farm	Coconut trees and recommended crops	0.5 ha	Demonstration in ARMMIARC
Nursery farm	Recommended crops	0.5 ha	Supplying seedlings of recommended crops
Composting plots	Vermicompost	10 m^2 x 3	Demonstration in ARMMIARC
Intercropping demo farm	Coconut trees and recommended crops	0.5 ha	Demonstration in core farmers' farm
Nursery farm	Recommended crops	0.5 ha	Demonstration of nursery for recommended crops
Composting plot	Vermicompost	10 m^2 x 1	Demonstration in core farmers' farms
Coconut sugar facility	Processing building and equipment		Financing service is provided to the cooperative with support from the LGUs on the basis of a request from the cooperative.

2) Equipment Plan

Table 8-47: Equipment Plan

Equipment	Quantity	Specification	Purpose
Computer	1	Laptop computer	Documentation in DAF-ARMM
Printer	1	Printer with photocopy function	Documentation in DAF-ARMM

(5) Plan of Operation

Table 8-48 shows the plan of operation which is divided into 2 phases

Table 8-48: Plan of Operation

Activities	Agency	Schedule (Year)									
		Pilot Phase			Implementation Phase						
		1	2	3	4	5	6	7	8	9	10
Pilot Phase (Maguindanao province)											
Project management	DAF										
Extension of appropriate coconut-based intercropping	DAF LGU										
Accelerated coconut fertilization and rehabilitation	PCA LGU										
Dissemination of processing technology	PCA DOST										
Monitoring of field activities and effects of training	DAF LGU										
Expansion Phase (Other 4 provinces)											
Project Management	DAF										
Extension of appropriate coconut-based intercropping	DAF LGU										
Accelerated coconut fertilization and rehabilitation	PCA LGU										
Dissemination of processing technology	PCA DOST										
Monitoring of field activities and effects of training	DAF LGU										

(6) Estimated Project Cost

Project costs are roughly estimated as follows (Tables 8-49 to 8-52).

1) Personnel Cost

Table 8-49: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Project Management	18 MM	200,000	3,600,000	Posted in DAF-ARMM for pilot phase
Assistance	18 MM	50,000	900,000	Posted in DAF-ARMM for pilot phase
Total Cost			4,500,000	

2) Facility and Equipment Cost

Table 8-50: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks[214]
< Pilot Phase >				
Intercropping demo farm	0.5 ha	200,000/ha	100,000	ARMMIARC
Nursery farm	0.5 ha	500,000/ ha	250,000	ARMMIARC
Composting plot	10 m^2 x 3	5,000/10m^2	15,000	ARMMIARC
Computer	1	50,000	50,000	DAF-ARMM
Printer	1	30,000	30,000	DAF-ARMM
Intercropping demo farm	0.5 ha	200,000/ha x 3	300,000	Core farmers' farm in 3 LGUs
Nursery farm	0.5 ha	500,000/ha x 3	750,000	Core farmers' farm in 3 LGUs
Composting plot	10 m^2 x 3	5,000/10/m^2	15,000	Core farmers' farm in 3 LGUs
Processing building and equipment	1	500,000	500,000	Financing service is provided to a cooperative with support from LGU based on a request from the target cooperative.
Total Cost			2,010,000	
< Implementation Phase >				
Composting plot	10 m^2 x 15	5,000/10m^2	75,000	Core farmers' farm in 15 LGUs
Processing building and equipment	3	500,000	1,500,000	3 cooperatives
Total Cost			1,575,000	Financing service will be provided to the target groups with support from LGUs based on a request from them or their access to finance institutions.

[214] Facilities and equipment are placed and set in the places indicated in the remarks.

3) Operational Cost

Table 8-51: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Coconut seedlings	100 seedlings	30/seedling	3,000	For demo farm in ARMMIARC
Other crops seedlings	100 seedlings	30/seedling	3,000	For demo farm in ARMMIARC
Earthworms	10kg	250/kg	2,500	For composting plot demo in ARMMIARC
Seedlings of coconut	100 seedlings	30/seedling x 3	9,000	Core farmers' farm in 3 LGUs
Other crops seedlings	100 seedlings	30/seedling x 3	9,000	Core farmers' farm in 3 LGUs
Earthworm	10kg	250/kg x 3	7,500	Core farmers' farm in 3 LGUs
Total Cost			34,000	
< Implementation Phase >				
Coconut seedlings	100 seedlings	30/seedling x 15	45,000	Core farmers' farm in 15 LGUs
Other crops seedlings	100 seedlings	30/seedling x 15	45,000	Core farmers' farm in 15 LGUs
Earthworms	10kg	250/kg x 15	37,500	Core farmers' farm in 15 LGUs
Total cost				Financing service will be provided to the target groups with support from the LGUs based on a request from them or their access to finance institutions.

4) Training and Seminar Cost

Table 8-52: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)
< Pilot Phase >			
Training on intercropping and composting and coconut farming (salt fertilization and rehabilitation)	5 participants x 5days x 5 times x 2 years	1,000/day-person	250,000
Training on processing, quality control, and cooperative strengthening	1 co-op (5 participants) x 5days x 3 times x 2 years	1,000/ day-person	150,000
Total Cost			400,000
< Implementation Phase >			
Training on intercropping and composting and coconut farming (salt fertilization and rehabilitation)	5 participants x 5days x 5 times x 5 years x 5 provinces	1,000/day-person	3,125,000
Training on processing, quality control, and cooperative strengthening	5 coops (25 participants) x 5 days x 3 times x 5 years	1,000/ day-person	9,375,000
Total Cost			12,500,000

(7) Collaboration with Other Projects

Related projects or activities are summarized in Table 8-53.

Table 8-53: Related Projects and Activities

Relevant Projects	Agency	Relationship with the Proposed Project Plan
Planting/replanting project of coconut	PCA	Collaboration
Salt fertilization project	PCA	Collaboration
Coconut intercropping project	DAF	Collaboration

8-4-1-5 Coffee

Project Title:
Coffee Industry Development in the ARMM through Production Increase and Quality Improvement for Marketable Green Coffee Bean Supply

(1) Project Summary

1) Background

Coffee is one of the priority commodities for production stimulation by the DA. According to the department, the country has been experiencing an increasing shortage of coffee. In 2010, demand for coffee was projected at around 66,000 tons, and it will exceed 78,000 tons in 2015. Mindanao has enough areas to meet 70% of the projected yearly expansion. The ARMM, thus, has the bulk of the potential areas due to slow land utilization.

High quality green coffee beans are well accepted by markets. Such beans are produced through selective harvesting and post-harvest processing facilities. However, most coffee-growing smallholders in the ARMM practice non-selective harvesting, leading to post-harvest loss in both quality and quantity. Senile trees also reduce productivity. The coffee-growing smallholders need to acquire adequate knowledge and technique in production, and technical improvement of cultivation and post-harvest methods is essential in the ARMM.

The project's purpose is to increase green coffee bean productivity and improve bean quality which would be well-accepted by the country market. Productive areas are expanded by rejuvenating senile coffee trees. To do that, some technical issues such as good seedling supply, cultivation, rejuvenation techniques, and post-harvest technology are addressed in project activities.

2) Target Areas

The target areas are existing coffee-growing areas in five provinces: primarily Robusta growing areas in Maguindanao and Lanao del Sur, along with areas producing four different coffee varieties in islands provinces (Sulu and Basilan). Altitudes higher than 1,000 m are appropriate for producing the Arabica variety. The two target areas in the pilot phase are one LGU in Maguindanao and one in Sulu province. The target areas in the implementation phase are five LGUs in five provinces (Table 8-54)

Table 8-54: Number of Target Areas

Phase	Target Areas (LGU)
Pilot	1 LGU in Maguindanao and 1 LGU in Sulu province
Implementation	5 LGUs in 5 provinces

3) Target Groups

The groups targeted are coffee-growing smallholders with 0.5 ha–5.0 ha farm lands and existing coffee-growing cooperatives or farmers intending to group for post-harvest processing to produce green coffee beans (Table 8-55).

Table 8-55: Target Groups

Phase	Target Groups (LGU)
Pilot	120 coffee-growing smallholders in the 2 provinces
Implementation	375 coffee-growing smallholders in the 5 provinces

4) Period

The project is divided into the pilot phase, running for three years, and expansion phase, running for seven years. The pilot phase is conducted in Maguindanao for the main island and Sulu provinces for the three islands representing major coffee producers in the ARMM. Based on the results of the pilot project, action will be adjusted and re-designed for the expansion phase.

5) Project Purpose

The project's purpose is to stimulate the coffee industry in the ARMM and improve coffee-growing smallholders' standard of living.

6) Expected Outcome

- Improved capacity of DAF for work management that is, planning, implementation, monitoring, and evaluation, with documentation ability.
- Seventy percent of the coffee-growing smallholders supported by the project adopt appropriate coffee farming methods and practice selective harvesting.
- One coffee-growing smallholders' group is formed in the pilot phase, and the farmers produce high-quality green coffee beans by using common service post-harvest facilities in the same phase.
- Three coffee-growing smallholder groups are formed in the implementation phase, and they produce high-quality green coffee beans by using common service post-harvest facilities.
- Thirty percent of senile coffee trees are rehabilitated by a rejuvenating technique.

7) Expected Impact

Coffee-growing smallholders' annual gross income from coffee farming increases, averaging Php 140,000/ha, with the following assumption: i) productivity of 2–3 kg per coffee tree is achieved, ii) recovery of Grade I green coffee beans is nearly 100% on a dried weight basis, and iii) Robusta[215] maintains its current selling price.

(2) Activities

1) Project preparation and management

The project office is set-up in DAF and a branch office is cited in the Sulu province DA for the pilot phase. Project preparation includes conducting the baseline survey, selecting target groups, locating senile coffee tree areas for rejuvenation, and so on. Training on project management through planning, implementation, monitoring, and evaluation are conducted for the DAF staff through on-the-job training.

Intensive technical training on coffee production is provided to DAF and DA technical staffs at the Nestle Experimental and Demo Farm in Tagum City, Davao del Norte so that they acquire technical skills for coffee farming to teach coffee growers. Intensive training on coffee production for trainers is proposed and tabulated in Table 8-56.

[215] Nestle Philippines, Inc. buys Grade I green coffee beans at Php 111.50/kg effective on March 18, 2011 at the satellite buying station.

Table 8-56: Proposed Intensive Training on Coffee Production for DAF-ARMM and Provincial DA Technical Staff

Topic	Contents
Nursery preparation	- Stem cutting and grafting propagation - Rooted cutting and grafting propagation - Nursery care and maintenance
Seedling plantation	- Fertilization and planting - Bending and sprout selection - Spreading and triple stem formation
Cropping system	- Coffee-based sustainable farming system with diversified crops such as corn, cassava, leguminous crops, fruits, and vegetables - Fertilization; weed control; pest control, particularly against berry borers, stem borers, and scale insects; and de-topping
Harvesting and post-harvest technology	- Selective harvesting for red ripe berries - Best quality harvest - Flotation, drying, dehulling, and sorting
Grading and classification	- Price difference between grade levels - Moisture incentive - Defect definitions
Rejuvenation	- Cutting and painting - Selecting healthy sprouts, fertilization, weeding and pruning of rejuvenated trees

2) Improvement of the coffee cropping system

ARMMIARC prepares a coffee demonstration farm, particularly for coffee-based intercropping with corn, cassava, long beans, potato, and other recommended crops. This demonstration farm can be a center for disseminating the coffee cropping system for those farmers in the ARMM who have difficulty accessing the Nestle Experimental and Demo Farm. Seedlings to be planted in the demonstration farm of ARRMIARC can be provided by either the Upi Coffee Nursery Center or Nestle Coffee Nursery Field in NORMIARC. In Sulu, core coffee farmers are selected and the demonstration farm, nursery beds, and composting sites are prepared within individual farmers' coffee farm land.

Coffee-growing smallholders are organized for extension purposes as groups that use the common post-harvest facility. Organized farmers are trained in coffee farming with the same training content as the TOT, described in Table 8-55; however, the farmers' training focuses primarily on the cropping system, selective harvesting, and post-harvest technology to increase productivity.

3) Rehabilitation of senile coffee tress

A survey is conducted to identify the areas where senile coffee trees should be rehabilitated to

revive their productivity. The rejuvenation process is demonstrated on a selected farmer's coffee trees, and the effects are observed over the course of 18 months. Continuous care method for rejuvenated trees is taught to farmers.

4) Improvement of green coffee bean quality by recommended post-harvest processing

A common service post-harvest processing facility equipped with a small cement flotation tank or an empty tank, de-pulper, bamboo table-type dryer or cemented drying pad with mats, netting or canvas, dehuller, and a platform balance is prepared after agreement with the said coffee-growing smallholder group. This facility could be established with cost sharing among the farmers with support from the LGUs.

Hands-on training for post-harvest technology (de-pulping, drying, dehulling, sorting, grading, and bagging) is conducted during harvesting season. During this training the farmers are also educated in green coffee beans quality, i.e., impurity, moisture content, color, size, and variety. This training could be conducted by qualified experts, including those from the private sector. For the islands, Coffee Processing Center in Sulu can be a resource facility to conduct the training.

5) Monitoring of field activities and effects of training, and evaluation

The MAOs and the BAT monitor the front line activities of the project. The monitoring observes effects of training in order to notify the project if follow-up support is needed. This monitoring is conducted by a trained regular staff of DAF, and a standard monitoring sheet is developed for this monitoring process.

At the end of the pilot phase, evaluation is conducted for applying lesson learned to the next phase. Re-designing of the next phase is required based on the evaluation result if it is necessary. Evaluation team is composed of DAF, LGUs and relevant organizations. Evaluation is conducted from the view point of the following two aspects. One is to examine managing ability of DAF if it can really manage the next phase. The other one is degree of technology dissemination on coffee enterprises to the beneficiaries.

- Management ability of DAF should be evaluated by checking degree of disbursement of budget allocated for the activities in the pilot phase. Eighty percent of disbursement of the budget should be acceptable in order to proceed to the next phase; otherwise, causes of the delay of the activities should be discussed. Moreover, information sharing and coordination ability of DAF should also be evaluated by interviewing DAF, LGUs, SUC and beneficiaries.

- Degree of technology dissemination is examined by observation of farmers' fields, interviewing farmers and examining farming records to know increase of income from coffee enterprises. If 70% of the beneficiaries are satisfied with the result on coffee enterprise, the next phase is carried out; otherwise, re-designing of the activities of the next phase is required. On top of that, post-harvest machinery and equipment should be observed if they are fully utilized and maintained well by the beneficiaries. Green coffee beans are to be examined if their quality is accepted as quality coffee by buyers.

(3) Management Plan

1) Project Management Structure

DAF performs planning, implementation, and monitoring of the entire project. Major related organizations to implement the activities are ARMMIARC, SUCs, Upi Agricultural School, private sector coffee firms such as Nestle Philippines, related organizations, and the LGUs (Province DA, the MAO, the BAT). Their functions are shown in Table 8-57 and relationships among organizations are illustrated in Figure 8-7.

Table 8-57: Functions of Organizations and Personnel to Implement the Project

Organizations/ Personnel	Function
DAF-ARMM	Performing project management: planning, implementation, and monitoring. Coordinating with other organizations, and instructing subordinate organizations and personnel of the LGUs such as the Province DA, the MAO and the BAT
ARMMIARC	Instructed by DAF-ARMM for extension activities on coffee-based integrated farming with corn, cassava, long beans, potato, and other recommended crops at the demonstration farm and vermicomposting plots. Lectures are provided for field training and facilitation as well.
LGUs	DA provincial staff in agriculture is trained by DAF-ARMM, and the DA staff directs the MAO, who accordingly instructs the BAT for project preparation and implementation. Monitoring reports flow in the reverse direction. Ground level staff of the MAO and the BAT facilitates farmers for technical support activities.
SUC	SUC provides technical staff and facilities for intercropping, composting, supplementing any technical training activities. Philippine Industrial Crops Research Institute of USM is the technical resource organization for this project.
Nestle Philippines	Nestle Experimental and Demo Farm in Tagum city provides all coffee production training.
Upi Coffee Nursery Center and Nestle Coffee Nursery Field	Upi Coffee Nursery Center and Nestle Coffee Nursery Field supply coffee seedlings.
Coffee Processing Center in Sulu	The center will be the resource facility conducting technical support activities, particularly post-harvest processing in the islands.

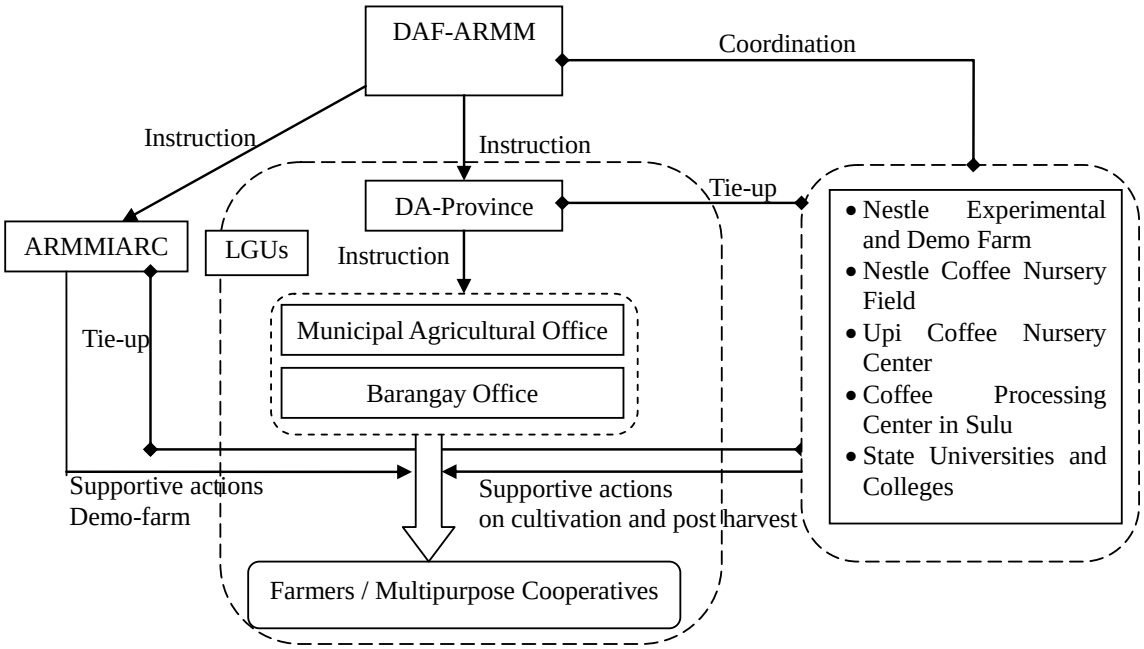


Figure 8-7: Relationship among the Organizations

2) Personnel Plan

The following personnel plan is designed for the project (Table 8-58).

Table 8-58: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project management	1	9 MM	Posted in DAF-ARMM
Assistance	1	9 MM	Posted in DAF-ARMM
Coffee-based farming system	1	When required	Staff of ARMMIARC/SUC
Composting	1	When required	Staff of ARMMIARC/SUC

A Filipino expert in project management, with expertise in social and economic issues of the ARMM, is posted in DAF to ensure smooth management of the project and to conduct capacity development of DAF through on-the-job training. Other necessary personnel are available from partner organizations of or external to the ARMM.

(4) Necessary Inputs

Necessary inputs are tabulated as follows (Tables 8-59 and 8-60).

1) Facility Plan

Table 8-59: Facility Plan

Facility	Specification/Structure	Area/ Scale	Purpose
Coffee farming demo farm	Coffee and recommended crops	0.5 ha	Demonstration in ARMMIARC
Nursery farm	Nursery for coffee	0.5 ha	Propagation demonstration
Coffee farming demo farm	Coffee and recommended crops	0.5 ha	Demonstration in farmers' fields in Sulu province
Composting plots	Vermicompost	10 m^2 x 3 units	Demonstration in ARMMIARC
Common service post-harvest processing facility	Equipped with a small empty tank, de-pulper, cemented drying pad dehuller, etc.		Collective use for a producers' group

2) Equipment Plan

Table 8-60: Equipment Plan

Equipment	Quantity	Specification	Purpose
Computer	1	Laptop computer	Documentation in DAF-ARMM
Printer	1	Printer with photocopy function	Documentation in DAF-ARMM
Float tank	1	Fabrication by use of second hand drum tank	Collective use for a producers' group
De-pulper	1	Wooden manual type	Collective use for a producers' group
Drying table	1	3 m (W) x 10-15 m (L) x 1 m (H) and Fabrication by use of wood, bamboo, etc.	Collective use for a producers' group
De-huller	1	Hulling rate of work: 200-250 kg of green coffee beans per hour	Collective use for a producers' group

(5) Plan of Operation

Table 8-61 shows the plan of operation.

Table 8-61: Plan of Operation

Activities	Agency	Schedule (Year)									
		Pilot Phase			Implementation Phase						
		1	2	3	4	5	6	7	8	9	10
Pilot Phase (Maguindanao and Sulu province)											
Project preparation and management	DAF										
Improvement of coffee cropping system	DAF LGU										
Rehabilitation of senile coffee tress	DAF LGU										
Improvement of green coffee bean quality by post-harvest processing	DAF LGU										
Monitoring of field activities and effects of training	DAF LGU										
Implementation Phase (5 provinces)											
Project preparation and management	DAF										
Improvement of coffee cropping system	DAF LGU										
Rehabilitation of senile coffee trees	DAF LGU										
Improvement of green coffee beans quality by post-harvest processing	DAF LGU										
Monitoring field activities and effects of training	DAF LGU										

(6) Estimated Project Cost

Project costs are roughly estimated and breakdown of the costs are shown in Tables 8-62 to 8-65.

1) Personnel Cost

Table 8-62: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Project Management	9 MM	200,000	1,800,000	Posted in DAF-ARMM for pilot phase
Assistance	9 MM	50,000	450,000	Posted in DAF-ARMM for pilot phase
Total Cost			2,250,000	

2) Facility and Equipment Cost

Table 8-63: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks[216]
< Pilot Phase >				
Coffee cropping system demo farm	0.5 ha	200,000/ha	100,000	Equipped in ARMMIARC
Nursery farm	0.5 ha	500,000/ha	250,000	Equipped in ARMMIARC
Composting plots	10 m^2 x 3	5,000/10m^2	15,000	Equipped in ARMMIARC
Computer	1	50,000	50,000	Equipped in DAF-ARMM
Printer	1	30,000	30,000	Equipped in DAF-ARMM
Float tank	1	Fabrication	-	Collective use for a producers' group
De-pulper	1	5,000	5,000	Collective use for a producers' group
Drying table	1	Fabrication	-	Collective use for a producers' group
De-huller	1	200,000	200,000	Collective use for a producers' group
Total Cost			650,000	
< Implementation Phase >				
Coffee cropping system demo farm	0.5 ha	200,000/ha x 3	300,000	For farmers' demo farm in 3 provinces
Nursery farm for other recommended crops	0.5 ha	200,000/ha x 3	300,000	For farmers' demo farm in 3 provinces
Composting plots	10m^2 x 3	5,000/10m^2	15,000	For farmers' demo farm in 3 provinces
Float tank	3	Fabrication	-	Collective use for a producers' group in 3 provinces
De-pulper	3	5,000	15,000	Collective use for a producers' group in 3 provinces
Drying table	3	Fabrication	-	Collective use for a producers' group in 3 provinces
De-huller	3	200,000	600,000	Collective use for a producers' group in 3 provinces
Total Cost			1,230,000	Financing facility will be provided to groups with support from the LGUs based on a request from them or their access to finance institutions.

[216] Facilities and equipment are placed or set in the places indicated in the remarks.

3) Operational Cost

Table 8-64: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Seedlings of coffee	200 seedlings	20/seedling	4,000	For demo farms in ARMMIARC and farmers' demo farms in Sulu
Other crops seedlings	200 seedlings	30/seedling	6,000	For demo farms in ARMMIARC and farmers' demo farms in Sulu
Earthworms	20 kg	250/kg	5,000	For demo farms in ARMMIARC and farmers' demo farms in Sulu
Total Cost			15,000	
< Implementation Phase >				
Seedlings of coffee	300 seedlings	20/seedling	6,000	For farmers' demo farms in 3 provinces
Other crops seedlings	300 seedlings	30/seedling	9,000	For farmers' demo farms in 3 provinces
Earthworms	30 kg	250/kg	7,500	For farmers' demo farms in 3 provinces
Total Cost			22,500	Financing facility will be provided to groups with support from the LGUs based on a request from them or their access to finance institutions.

4) Training and Seminar Cost

Table 8-65: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Intensive coffee training including post-harvest and quality control for ARMMIARC staff and the LGUs' technical staff	10 participants x 10 days x 3 times x 2 years	310/day-person	186,000	Nestle Experimental and Demo Farm Free accommodation
Coffee farming and composting	10 participants x 5 days x 3 times x 2 years x 2 provinces	1,000/day-person	600,000	ARMMIARC and farmers' demo farm in Sulu
Coffee farming training for farmers (Optional)	10 participants x 3 days x 3 times x 2 years	310/day-person	55,800	Nestle Experimental and Demo Farm Free accommodation
Total Cost			786,000	Cost of optional training is not included.
< Implementation Phase >				
Intensive coffee training including post-harvest and quality control for the LGUs' technical staff in the 3 other provinces	10 participants x 10 days x 3 times x 3 years x 5 provinces	310/day-person	1,395,000	Nestle Experimental and Demo Farm Free accommodation
Coffee farming and composting	5 participants x 5 days x 3 times x 5 years x 5 provinces	1,000/day-person	1,875,000	ARMMIARC or farmers' demo farm in 5 provinces
Total Cost			3,270,000	

(7) Collaboration with Other Projects

Related projects or activities are summarized in Table 8-66.

Table 8-66: Related Projects and Activities

Relevant Projects	Agency	Relationship with the Proposed Project Plan
High Value Crops Development Program	DA	Budget allocation from the program for DAF-ARMM can be expected.

8-4-1-6 Mangosteen

Project Title:
Mangosteen Industry Development through Increasing Production by Appropriate Cultivation and Introduction of Value-Added Processing in the ARMM

(1) Project Summary

1) Background

Sulu is a major source of mangosteen in the ARMM with the optimum conditions for growth, but the farmers only use primitive growing methods. Potential growers also hold the misconception that mangosteen production is unreliable because of its slow growth, long juvenile period, and biennial production. Some also think that the fruiting and yield of mangosteen tree is unpredictable. Thus Sulu mangosteen growers stick to traditional natural cultivation and do not practice appropriate modern cultivation techniques.

Mangosteen is commonly processed into jam, but usually for household consumption only, and has also been used for alternative medicinal purposes in Sulu. Mangosteen tea is popular for intestinal regulation, as an antidiarrhetic, and for mothers after delivery. Although its medicinal value is well known, local farmers or cooperatives do not know what form of processed product they must produce and what processing technology they have to acquire to produce value-added processed mangosteen products in Sulu.

2) Target Areas

Target areas are tabulated in Table 8-67. Mangosteen producing areas of about 500 ha are specified as target areas[217] considering security and production potential in Sulu province for five years in pilot phase and 500 ha of Maguindanao and Lanao del Sur provinces are to be the target areas in the expansion phase for five years since DAF distributed seedlings of mangosteen in the two provinces two years ago[218].

Table 8-67: Number of Target Areas

Phase	Target areas (LGU)
Pilot	500 ha in Sulu province
Expansion	500 ha in Maguindanao and Lanao del Sur

[217] Indanan (100), Panamao, Parang (15), Patikul (200), and Talipao (216) are potential municipalities for mangosteen in Sulu.
[218] DAF-ARMM distributed mangosteen seedlings to 53 farmers for 120 ha.

3) Target Groups

Target groups are tabulated in Table 8-68. In pilot phase, mangosteen farmers, about 550 farm households, and potential multipurpose cooperatives are beneficiaries of the action plan in Sulu province. In Maguindanao and Lanao del Sur, some 500 farmers, including 53 farmers who were supplied with mangosteen seedlings by DAF, and multipurpose cooperatives can be target groups.

Table 8-68: Target Groups

Phase	Target Groups
Pilot	550 mangosteen coffee growing smallholders in Sulu
Expansion	500 potential farmers in Maguindanao and Lanao del Sur

4) Period

Period of action plan is divided into two; pilot phase for 5 years and expansion phase for 5 years.

5) Project Purpose

To promote local industry through improvement of mangosteen production and introducing value added processing activities, and thus, improve small-scale farmers' standard of living.

6) Expected Outcome

- DAF can manage the project cycle (planning, implementation, monitoring, and evaluation) and produce documentation.
- Seventy percent of the beneficiaries of the project can perform appropriate mangosteen cultivation and harvest mangosteen every year.
- At least four cooperatives begin value-added processing businesses using mangosteen

7) Expected Impact

The mangosteen yields at approximately 3.5 ton/ha of current level becomes almost 15 ton/ha.

(2) Activities

1) Project preparation and management

DAF is the organization responsible for managing the entire project. DAF will instruct and monitor Sulu's provincial DA, which performs ground-level project management in the province. The project office is set up in DAF with a branch office in Sulu. The baseline survey is conducted, and target areas and groups are specified. Potential core farmers are to be selected

for organizing a farmers group for extension and future processing activities. The kick-off conference is held with the selected LGUs to raise the stakeholders' awareness of the project. The mangosteen festival is organized, and stakeholders such as buyers outside islands are invited during the harvesting season.

2) Preparation and conducting extension activities for appropriate mangosteen cultivation

Small-scale farmers acquire fundamental information on mangosteen production and adopt appropriate mangosteen farming methods to improve their farming practices, ensuring the annual supply of mangosteen. Processing technology is also adopted by potential groups or cooperatives of mangosteen producers.

Guidelines and manuals containing information on the cropping system, cultivation methods, processing, and marketing are well documented by experts, particularly those from ARMMIARC and ATI, in collaboration with the University of Southern Mindanao (USM), before initiating extension activities.

Simultaneously, research on fertilization and flowering is conducted by the Sulu DA and USM at selected resource farmers' fields. Mangosteen cultivation using intercropping with other crops like coconut and other fruits is also conducted in collaborating farmers' fields, along with composting plots. Nursery fields are also set up in ARMMIARC and resource farmers' fields for farmers to access to nursery. Age of seedlings would be between 1 and 2 years old, or 1.5–2.1 m high seedling called large-size planting material (LPM) is recommended.

TOT is conducted for the technical staff of DAF, the provincial DA and the LGUs such as the MAOs and the BAT by resource persons from USM and Dr. Alfred Essentials Inc. to convey all necessary information about the mangosteen, i.e., intercropping[219], cultivation methods, processing, and marketing.

Mangosteen farmers' groups will be organized for efficient extension and include potential groups to be introduced for value-added processing as well; therefore, 10 ha of total farm land area is recommended when groups are organized. A combination of the Farmers Field School, extension caravan, and observation tour to mangosteen-based intercropping in Kidapawan of North Cotabato are the means of technology dissemination.

[219] Intercropping with lanzones, banana, and rubber is recommended. In case of lanzones, planting density of mangosteen is 10 m (raw distance) x 6 m (hill distance) is recommended.

3) Introduction and technical instruction of value-added processing to potential farmers cooperatives/groups and local entrepreneurs

Organized farmers' groups or existing multipurpose cooperatives whose members produce mangosteen are introduced to value-added processing technology.

First, target farmers or members of the cooperatives receive general information about the features of mangosteen production: shelf life and economic values of fresh fruits, preserved products like jam and juice, functional and medicinal products such as soaps, teas, capsules, and the like.

Potential processed products from mangosteen and its by-products, especially pastilles, candy, jam, juice, and soap, are developed in collaboration with DOST, USM, and the FDC (Food Development Center), or private sector entities so that the process of value-added production is documented for the target groups or cooperatives.

A cottage-type food processing facility is constructed as a model for training and production purposes. The potential groups, cooperatives, and local entrepreneurs are trained in processing based on the documented processing method, using the processing facilities. Pastilles, candy, jam, and soap are the target processed products to start businesses. During processing, the by-product, rind, can be set aside and dried for use as a raw material supplied to private firms producing herbal medical products. The target groups for processing are also trained to obtain certification and licenses.

4) Monitoring of field activities and effect of training, and evaluation

MAOs and the BAT monitor progress of the project activities to confirm the effects of training to inform the project if follow-up support is needed. This monitoring is conducted by a regular monitor trained by DAF, and a standard monitoring sheet will be developed for this monitoring process. Evaluation results are reflected to design of expansion phase for Maguindanao and Lanao del Sur provinces.

At the end of the pilot phase, evaluation is conducted for applying lesson learned to the next phase. Re-designing of the next phase is required based on the evaluation result if it is necessary. Evaluation team is composed of DAF, LGUs and relevant organizations. Evaluation is conducted from the view point of the following two aspects. One is to examine managing ability of DAF if it can really manage the next phase. The other one is degree of technology dissemination on mangosteen enterprises to the beneficiaries.

- Management ability of DAF should be evaluated by checking degree of disbursement of budget allocated for the activities in the pilot phase. Eighty percent of disbursement of the budget should be acceptable in order to proceed to the next phase; otherwise, causes of the delay of the activities should be discussed. Moreover, information sharing and coordination ability of DAF should also be evaluated by interviewing DAF, LGUs, and other relevant organizations, and beneficiaries.
- Degree of technology dissemination is examined by observation of farmers' fields, interviewing farmers and examining farming records to know increase of income from mangosteen enterprises. If 70% of the beneficiaries are satisfied with the result on mangosteen enterprise, the next phase is carried out; otherwise, re-designing of the activities of the next phase is required. On top of that, value added products from mangosteen, which are to be developed by consolidated groups by use of FDC's service, should be carefully examined with quality and applied processing technology if they can really accepted by buyers or end consumers.

(3) Management Plan

1) Project Management Structure

DAF performs planning, implementation, and monitoring of the entire project. Major related organizations to implement the activities are ARMMIARC and ATI, DOST, RBOI, SUCs (USM and MSU, Sulu), FDC (Manila), and the LGUs (province DA, the MAO, the BAT); private sector entities can also provide human resources. Their functions are shown in Table 8-69, and the relationships among organizations are illustrated in Figure 8-8.

Table 8-69: Functions of Organizations and Personnel to Implement the Project

Organizations/ Personnel	Function
DAF-ARMM	Performing project management; planning, implementation, and monitoring. Coordinating with other organizations, and instructing subordinate organizations and personnel of the LGUs such as the provincial DA, the MAO and the BAT
ARMMIARC and ATI	Instructed by DAF-ARMM for extension activities on mangosteen cropping system with other crops such as coconut and lanzones at the demonstration farm, nursery, and demonstration vermicomposting plots.
LGUs	Sulu province DA staff in agriculture is trained by DAF-ARMM, and the DA staff directs the MAO, who accordingly instructs the BAT for project preparation and implementation. Monitoring reports flow in the reverse direction. Ground level staff of the MAO and the BAT facilitates farmers for technical support activities.
DOST, RBOI, and CDA	These coordinate with DAF-ARMM for any technical activities for processing, quality control, licensing, cooperative strengthening, consultation for capitalization, etc.
SUCs	USM in Kabacan and MSU in Sulu provide technical staff and facilities for lectures and documentation on technical guidelines and manuals, together with ARMMIARC and ATI.
FDC	It can develop and document the processing of products such as juice and jam based on a request from target groups. In this case, cost for development is borne by the beneficiaries.
Private sector	Dr. Alfred Essentials Inc. is one of the candidates in Mindanao to give technical lectures, demonstrate its mangosteen-based intercropping with lanzones, and share its knowledge and experience in cultivation, processing, and marketing.

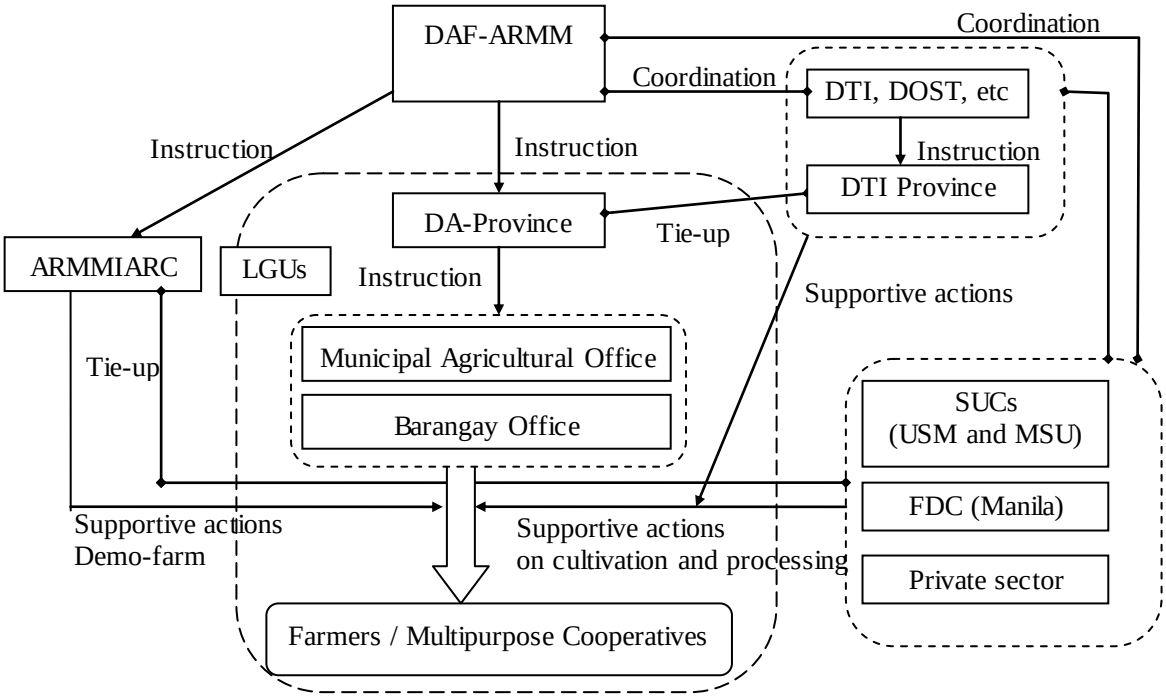


Figure 8-8: Relationship among the Organizations and Personnel

2) Personnel Plan

This personnel allocation is planned and tabulated in Table 8-70. A Filipino expert in project management, with expertise in social and economic issues of the ARMM, is posted in DAF to ensure for smooth management of the project and to conduct capacity development of DAF through the on-the-job training in the pilot phase. Other necessary personnel are available from partner organizations of or external to the ARMM.

Table 8-70: Required Expertise in Implementation of the Project

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project management	1	30 MM	Posted in DAF-ARMM during pilot phase
Assistance	1	30 MM	Posted in DAF-ARMM during pilot phase
Mangosteen farming	1	When required	SUC/private sector
Compost making	1	When required	Staff of ARMMIARC/SUC
Mangosteen processing	1	When required	Staff of DOST/FDC/Private sector
Quality control in food processing	1	When required	Staff of DOST/FDC/Private sector

(4) Necessary Inputs

The listed facilities and equipment in Tables 8-71 and 8-72 are the items required for performing the activities in the action plan.

1) Facility Plan

Table 8-71: Facility Plan

Facility	Specification/ Structure	Area/Scale	Remarks
Mangosteen demonstration farm	Mangosteen and lanzones or coffee	0.5 ha	Demonstration in ARMMIARC
Nursery farm	Mangosteen seedling	0.5 ha	Supplying seedlings and demonstration
Composting plots	Vermicompost	10 m^2 x 3	Demonstration in ARMMIARC
Mangosteen demonstration farm	Coconut trees and recommended crops	0.5 ha	Demonstration in core farmers' farm
Nursery farm	Mangosteen seedling	0.5 ha	Demonstration of nursery for recommended crops
Composting plots	Vermicompost	10 m^2 x 1	Demonstration in core farmers' farm
Simple multipurpose processing facility	Processing building and equipment		Financing facility is provided to cooperatives with support from the LGUs based on a request from a target cooperative and cost sharing with donor agencies

2) Equipment Plan

Table 8-72: Equipment Plan

Equipment	Quantity	Specification	Purpose
Computer	2	Laptop computer	Documentation in DAF-ARMM and DA Sulu
Printer	2	Printer with photocopy function	Documentation in DAF-ARMM and DA Sulu
Pick-up truck (4WD)	1	Extension and monitoring activities	DA Sulu
Equipment for processing	3 sets	Fundamental cooking equipment for processing	Training and production of value-added products

(5) Plan of Operation

Plan of operation is shown in Table 8-73.

Table 8-73: Plan of Operation

Activities	Agency	Schedule (Year)																	
		1		2		3		4		5		6		7		8		9		10	
Pilot Phase																			
Project preparation																			
Project management																			
Preparation of extension																			
Extension activities for appropriate cultivation																			
Introduction and technical instruction of processing																			
Monitoring of field activities and effect of training																			
Expansion Phase																			
Project preparation																			
Project management																			
Preparation of extension																			
Extension activities for appropriate cultivation																			
Introduction and technical instruction of processing																			
Monitoring of field activities and effect of training																			

(6) Estimated Project Cost

Breakdown of the project cost are shown in Tables 8-74 to 8-78.

1) Personnel Cost

Table 8-74: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Project Management	30 MM	200,000	6,000,000	Posted in DAF-ARMM for pilot phase
Assistance	30 MM	50,000	1,500,000	Posted in DAF-ARMM for pilot phase
Total Cost			7,500,000	

2) Facility and Equipment Cost

Table 8-75: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks[220]
Mangosteen demonstration farm	0.5 ha	200,000/ha	100,000	ARMMIARC
Nursery farm	0.5 ha	500,000/ha	250,000	ARMMIARC
Composting plots	10 m^2 x 3	5,000/10 m^2	15,000	ARMMIARC
Mangosteen demonstration farms	0.5 ha x 3	200,000/ha	300,000	Core farmers' farm for DA's extension
Nursery farms	0.5 ha x 3	500,000/ha	750,000	Core farmers' farm for DA's extension
Composting plots	10 m^2 x 3	5,000/10 m^2	15,000	Core farmers' farm for DA's extension
Simple multipurpose processing facility	3 sets	500,000	1,500,000	Supported by the LGUs based on request and cost sharing with beneficiaries
Computer	2	50,000	100,000	DAF-ARMM and DA Sulu
Printer	2	30,000	60,000	DAF-ARMM and DA Sulu
Pick-up truck (4WD)	1	800,000	800,000	DA Sulu
Equipment for processing	3 sets	300,000	900,000	Supported by the LGUs based on request and cost sharing with beneficiaries
Total Cost			4,790,000	

3) Operational Cost

Table 8-76: Operation Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Seedlings of mangosteen (3 years old[221])	100 seedlings	150/seedling	15,000	For demo farm in ARMMIARC
Other crop seedlings such as lanzones	50 seedlings	150/seedling	7,500	For demo farm in ARMMIARC
Earthworms	10 kg x 3	250/kg	7,500	For composting plot demo in ARMMIARC
Seedlings of mangosteen (3 years old)	100 seedlings x 3	150/seedling	45,000	Core farmers' farm for DA's extension
Other crop seedlings such as lanzones	50 seedlings x 3	150/seedling	22,500	Core farmers' farm for DA's extension
Earthworms	10 kg x 3	250/kg	7,500	Core farmers' farm for DA's extension
Total Cost			41,500	

[220] Facilities and equipment are placed or set in the places indicated in the remarks.

[221] 1.5–2.1m high seedling called large size planting material (LPM) is recommended.

4) Training Cost

Table 8-77: Training Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)
Training of Trainers (TOT) on mangosteen cropping, nursery, cultivation, and processing for DAF-ARMM and DA Sulu	24 participants x 5 days x 2 times (1st year)	12,000/day	120,000
Training on mangosteen cultivation, processing, and marketing, in Sulu for pilot phase	24 participants x 5 days x 3 times x 3 years	12,000/day	540,000
Training on gross marginal product (GMP), shelf life, and others for pilot phase	10 participants x 5 days x 2 times x 2 years	2,000/day-person	400,000
Total Cost (Pilot Phase)			2,560,000
Training of Trainers (TOT) on mangosteen cropping, nursery, cultivation, and processing for DAF-ARMM and DA Maguindanao and Lanao del Sur for expansion phase	24 participants x 5 days x 2 times (1st year) x 2 provinces	12,000/day	240,000
Training on mangosteen cultivation, processing, and marketing in Maguindanao and Lanao del Sur for expansion phase	24 participants x 5 days x 3 times x 3 years for 2 provinces	12,000/day	1,080,000
Training on GMP, shelf life, and others for expansion phase	10 participants x 5 days x 2 times x 2 years for 2 provinces	2,000/day-person	800,000
Total Cost (Expansion phase)			2,120,000

5) Development cost of processed products

Table 8-78: Development Cost of Processed Products

Main Items	Cost (Php)	Remarks
Development of jam at FDC for three provinces	30,000 x 3	Based on request and 25 days are required to develop the products
Development of juice at FDC for three provinces	30,000 x 3	Based on request and 25 days are required to develop the products
Development of others at FDC for three provinces	30,000 x 3	Based on request and 25 days are required to develop the products
Total Cost	270,000	

(7) Collaboration with Other Projects

None

8-4-2 **Fisheries**

8-4-2-1 Abalone

Project Title:
Development of Abalone Culture to Improve the Living Standard of Coastal Communities in the ARMM

(1) Project Summary

1) Background

Abalone is one of the high-value fisheries products that are commonly produced in the island provinces of the ARMM. Abalone seeds can be produced artificially at local hatcheries, and they are regularly distributed to local fishers, especially in Tawi-Tawi. However, the abalone seed supply is too limited to promote abalone culture all over the island provinces. In addition, abalone culture is still new in the ARMM. Therefore, basic methods and skills for abalone culture are not widely diffused in the local fishing communities. Currently, only a few local fishers engage in abalone culture at their pens and cages individually. The proposed project intends to develop and deploy a community-based business model for abalone culture by introducing small-scale, backyard-type pens and cages in model programs.

2) Target Areas

The main target areas for the proposed project are the provinces of Tawi-Tawi, Sulu, and Basilan. The pilot project for abalone culture will be conducted at two or three model sites in Tawi-Tawi, because abalone seeds are procurable from the local hatcheries. If there is easy access to and easy monitoring of project sites, additional sites for the pilot project may be added, especially in Maguindanao province. After the completion of the pilot project, the model programs for promotion of abalone culture will be conducted at two to three selected priority municipalities in each target province (Table 8-79).

Table8-79: Number of Target LGUs in the Project

Main programs	Target areas
Pilot project (3 years)	2-3 model sites (barangay) in Tawi-Tawi
Model program (7 years)	2-3 priority municipalities in Tawi-Tawi 1-2 municipalities in Sulu and Basilan

3) Target Group

The main target group of the proposed project is local fishers who intend to start abalone culture. Local farmers have to form their own cooperatives or associations to receive financial and technical services. Municipal LGU officers in charge of fisheries programs will benefit from the project by learning the basic skills of abalone culture. Basically, in each priority municipality, one or two fish farmers' organizations, such as cooperatives and associations, will also be selected to participate in the project.

4) Project Period

A total of ten years is necessary for the overall project.

5) Project Purpose

Local production of abalone will be increased by improvement of the seed supply and introduction of backyard culture methods.

6) Expected Outcome

The production of cultured abalone is expected to be 0.5 to 1.0 ton annually at a priority municipality in the project period.

7) Expected Impact

When the project succeeds in producing 0.5 to 1.0 ton of fresh abalone annually at a priority municipality, the expected economic impact on the municipality will be about Php 250,000 to 500,000 per year (the average price of fresh abalone is Php 500/kg in Tawi-Tawi). Since the second phase is to be conducted at three to five priority municipalities in the project, the annual impact to the regional economy may reach Php 1.0 to 2.5 million. However, since there is a limit to the abalone seed supply from a local marine hatchery, abalone production cannot increase sharply in large quantities.

(2) Activities

1) Selection of priority municipalities and model sites for abalone culture promotion

Several priority municipalities will be selected in the target provinces, Tawi-Tawi, Sulu, and Basilan, in order to promote abalone culture as a local business model. To select the priority municipalities that intend to promote abalone culture intensively, the project will ask municipal LGUs to submit proposals presenting their ideas and plans for abalone culture promotion. After the candidates to be priority municipalities have been selected, field surveys will be conducted

in the candidate areas by a team of local consultants and the Bureau of Fisheries and Aquatic Authority-ARMM (Hereinafter called BFAR) officers. The survey will be intended to confirm that the geological and social conditions are adequate for abalone culture. Given the results of the surveys, priority municipalities for abalone culture will be chosen. Depending on the condition of the abalone seed supply, two or three priority municipalities in Tawi-Tawi, and one or two priority municipalities in Sulu and Basilan, will be selected for the future model programs.

2) Strengthening the capacity for abalone seed production at local hatcheries

To increase the supply of abalone seeds, the project intends to improve the capacity for abalone seed production at local marine hatcheries. At present, Lato-Lato Marine Multi-species Hatchery, located in Tawi-Tawi province, produces abalone seeds regularly and sells them to individual farmers. In order to increase the amount of produced abalone seeds, the facilities of the marine hatchery should be expanded. The project intends to propose an expansion plan of the marine hatchery's facilities for abalone seed production and estimate its construction costs. Given a project or governmental budget, construction work will start to extend facilities for abalone seed production.

3) Pilot project on abalone grow-out culture

First of all, small-scale pilot projects will be conducted at a few suitable sites (barangay level) to verify the productivity and profitability of abalone grow-out culture. Moreover, the projects will identify important issues and problems of operation and business in abalone production. The pilot projects will be prepared and carried out mainly at selected sites in Tawi-Tawi, because of easy access to abalone seeds from local hatcheries.

For introduction of abalone grow-out culture, a stable supply of suitable natural seaweed for abalone growth, such as *Gracilaria spp.*, is very important. To continue feeding abalone on fresh seaweed, farmers should harvest natural seaweed and carry it into their pens and cages regularly. The project will provide necessary materials for assembling small-scale backyard pens and cages as extension models. Those backyard pens and cages will be set in front of or behind farmers' houses.

The farmers who participate in the pilot project will need to take responsibility for recording field data of their abalone culture operation. During the pilot project (about three years), the pilot farmers may harvest market-size abalone two or three times from their seeds. For some target groups, microfinance programs will also be combined with culture activities in the pilot

projects, in order to evaluate their actual effects on the financial management of local famers. Given the collected field data, BFAR will evaluate the productivity and profitability of backyard pen or cage culture operation. Any issues and problems during the pilot project will provide information on how to improve the future technical and business operations of local abalone culture. Municipal LGUs will take responsibility for coordinating and monitoring the field activities of abalone culture in backyard pens and cages.

4) Organization of local abalone farmers as local business groups

To introduce financial programs and technical services for abalone culture smoothly, the project intends to encourage local abalone farmers to form local business groups, such as farmers' cooperatives or associations. Ideally, a local cooperative or association will include all the local farmers who are engaged in abalone culture in each barangay or area.

If local producers' cooperatives or associations already exist in the priority municipalities, those existing cooperatives or associations will be used to introduce financial programs and technical services for abalone culture promotion. Those abalone farmers' cooperatives or associations will be expected to take responsibility for loans and repayments by local farmers, and for coordinating with municipal LGUs and BFAR.

5) Arrangement of financial programs for abalone culture promotion

Adequate loan programs arranged with local financial institutions, such as governmental or commercial banks, will be introduced into priority municipalities to support abalone farmers' operations. BFAR will coordinate with municipal LGUs and local financial institutions to prepare reasonable loan programs for abalone culture promotion to provide business support for small-medium enterprises.

Local financial institutions will be expected to provide cash loans with reasonable interest rates, but only to abalone farmers' cooperatives or associations, not to individual farmers directly. The leaders of farmers' cooperatives will be expected to coordinate loans to and repayments by their member farmers with municipal LGUs.

6) Training programs for abalone culture promotion

To promote the basic ideas and skills of abalone culture, intensive training programs will be prepared for municipal LGU officers and local farmer leaders in the priority municipalities. The training programs will cover not only technical subjects, but also farming management, especially record keeping and basic accounting for a culture business. BFAR will prepare basic

plans and necessary materials for the training programs, and will conduct them in appropriate locations.

Having a small abalone hatchery on its campus, Mindanao State University (MSU) Tawi-Tawi Campus produces abalone seeds regularly and does research on abalone culture. MSU Tawi-Tawi can collaborate on technical instructions to local farmers in the training programs. Its marine research facility for abalone culture can be used as a training site. Lato-Lato Marine Multi-species Hatchery can also be used for the training programs on abalone culture. Since it has begun local research on abalone culture, MSU Sulu Campus is also an important resource to promote abalone culture in Sulu province.

On-site practical training will also be conducted to train local fishers in appropriate methods and skill for abalone grow-out culture at actual culturing sites (Table 8-80). BFAR will prepare and conduct the practical training program in abalone culture at model sites in priority municipalities in collaboration with local researchers at MSU Tawi-Tawi or Sulu.

Table 8-80: Contents of Training Programs for Abalone Culture Promotion

Training Title	Participants	Contents	Places
Training on abalone culture in backyard pens and cages	Municipal LGU officers, Municipal Fisheries Coordinators, Local farmer leaders of model sites	- Basic skills of abalone culture - Backyard culture in pens or cages - Feeding management - Field trips to abalone culture sites, etc.	Lato-Lato Marine Multispecies Hatcheries (Tawi-Tawi) or MSU Tawi-Tawi
On-site practical training on abalone backyard culture	Local farmers of model sites	- Assembling of backyard pens or cages - Feeding management - Practical record keeping, etc.	Model sites in priority municipalities

7) Monitoring and evaluation of field activities of abalone culture promotion

After loans have been arranged and training programs have been implemented, local farmers or farmers' groups will initiate abalone culture. To maintain the abalone culture at the model sites, municipal LGU officers in charge of fisheries programs and Municipal Fisheries Coordinators will regularly visit the backyard pens or cages and observe the abalone culture operations. BFAR officers will also visit the priority municipalities regularly with MSU's researchers to supply technical advice to local farmers and monitor repayment of loans through their cooperatives and associations.

Moreover, to evaluate the overall progress and achievement of the project, BFAR will conduct evaluation studies with local consultants approximately every two years. Given the evaluation results, the components and activities of the project for abalone culture will be revised and modified to be more practical for the farmers' cooperatives or associations at model sites.

At the completion of the preparation phase, the project evaluation teams, which are composed of BFAR, municipal LGUs and local financial institutes, will verify the achievements of the preparatory activities for formulation of proper extension models of abalone culture. The following indicators should be monitored and evaluated to proceed the model program phases.

- Improvement of the capacity of abalone seed production at local hatchery.
- Economic and technical feasibilities of applied techniques of abalone grow-out culture.
- Preparation of proper financial schemes to support abalone culture activities.
- Organization of farmers' cooperatives and associations at priority municipalities.

(3) Management Plan

1) Project Management Structure

Schematic diagram of structure of project management is shown in Figure 8-9. The main project office will be placed at Cotabato City in order to communicate with the BFAR head office smoothly. A local technical adviser and project assistants will work at the main office to operate and coordinate the project activities with BFAR. Additionally, a liaison project office will be placed in Zamboanga City to coordinate the pilot projects and model programs in island provinces, Tawi-Tawi, Sulu, and Basilan.

BFAR will carry out overall coordination of project activities. Provincial Fisheries Officers (PFO) and Municipal Fisheries Coordinators (MFC) will mainly monitor activities on model sites in target provinces and priority municipalities. Municipal LGUs will also be responsible for coordinating and monitoring local fish farmers at model sites.

Local financial institutions, such as governmental or commercial banks, will prepare and offer appropriate loan programs for small-scale business groups organized by local farmers, such as cooperatives or associations. In principle, the financial institutions will provide loans to farmers' cooperatives or associations, and collect repayment from them. The farmers' cooperatives or associations will be expected to coordinate loans to and repayment from abalone farmers.

BFAR will also take charge of evaluations of the pilot project, will conduct field studies with

local consultants to collect important indicators and information about field activities, and will analyze them to arrive at its concluding evaluation of results.

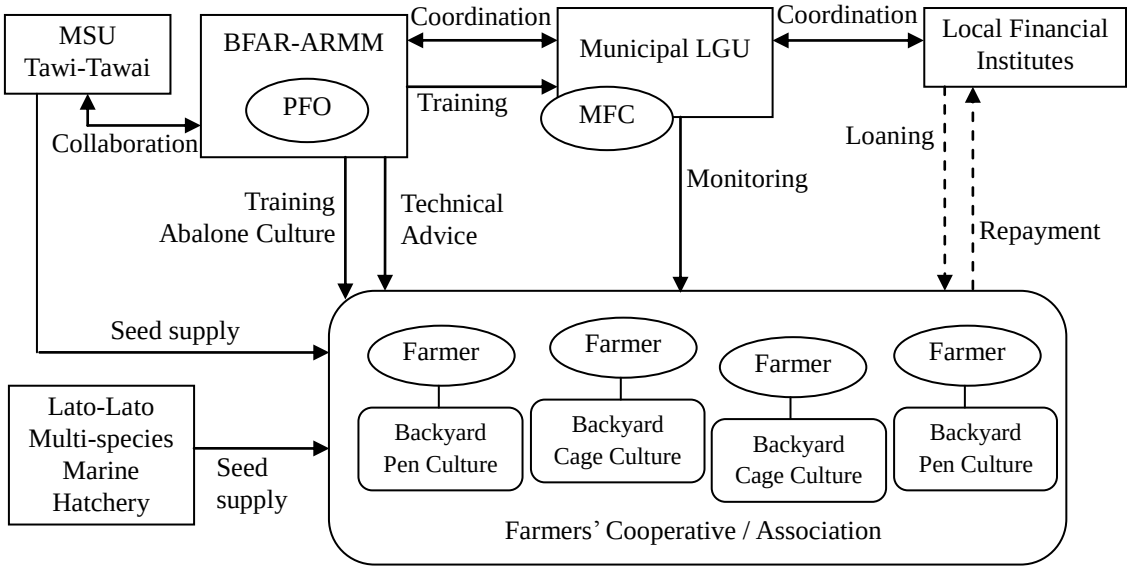


Figure 8-9: Implementation Structure for Abalone Culture Promotion

2) Personnel Plan

The following local personnel will be necessary to carry out all project activities (Table 8-81). To coordinate the overall programs smoothly and to monitor technical and financial services properly, a local senior consultant will be posted as technical adviser in the project. The technical advisor will oversee overall project activities in coordination with BFAR, municipal LGUs, and local financial institutions. Local assistants will also be posted at the main and liaison offices to take charge of logistics and support to field activities.

Table 8-81: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Technical advisor	1	12 MM x 10 years	Filipino consultant (senior)
Project assistant in the main office	1	12 MM x 10 years	Filipino consultant
Project assistants in the liaison office	2	12 MM x 10 years	Filipino consultant
Project coordinator	1	12 MM x 10 years	BFAR-ARMM
Field officers (Monitoring at provincial level)	3	1 MM x 10 years	Provincial Fisheries Officers (BFAR) in three target provinces
Field officers (Monitoring at municipal level)	5	1 MM x 10 years	Municipal Fisheries Officers (BFAR) and municipal LGU officers at priority municipalities
Financial program managers (management/monitoring at regional level)	2	2 MM x 4 years	In charge of Small-Medium Enterprises (SME) in local financial institutions
Financial program coordinators (management/monitoring at provincial level)	3	1 MM x 10 years	Staff in charge of SME at provincial branches of local financial institutions
Cooperative development officers (support to farmers' cooperatives)	3	When required	Provincial CDA officers in target provinces
Training lecturers	10	When required	BFAR-ARMM Lato-Lato Marin Multi-species Hatchery, and MSU Tawi-Tawi and Sulu

(4) Necessary Inputs

Necessary facilities and equipment are listed in Tables 8-82 and 8-83.

1) Facility Plan

Table 8-82: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Main project office	Office space in Cotabato City	4 -5 persons	
Liaison project office	Office space in Zamboanga City	2-3 persons	
Lato-Lato Marine Multi-species Hatchery	Facilities for abalone seed production		Extension of abalone seed production facility may be necessary.

2) Equipment Plan

Table 8-83: Equipment Plan

Equipment	Quantity	Specification	Remark
Office equipment	2	Copier, fax machine, desk, chair, etc.	For main and liaison project offices
Computer sets	5	Computer, printers, scanner, etc.	2 sets for project offices 3 sets for target provinces
Water-quality devices	5	*p*H meter, DO meter, etc.	
Materials for model backyard pens / cages	15	Nets, ropes, bamboo sticks, etc.	For pilot projects

(5) Plan of Operation

The project roughly will require the first three years for the pilot project and expansion of the marine hatchery facility, and the next seven years for the model programs of abalone culture promotion. The model programs include two subphases. Each subphase will require five years, but they will overlap during the project period (Table 8-84). The first subphase will cover two or three priority municipalities only in Tawi-Tawi province. The second subphase will cover one or two priority municipalities in the other provinces, Sulu and Basilan.

Table 8-84: Plan of Operation

Activities	Agency	Year									
		1	2	3	4	5	6	7	8	9	10
Project operational phases		◂Preparation Phase▸					◂2nd Phase of Model Program▸				
				◂1st Phase of Model Program▸							
Selection of priority municipalities	BFAR	■	■	■							
Expansion of Lato-Lato Marine Hatchery facility	BFAR	■	■	■	■	■	■				
Pilot project of grow-out culture in backyard pen / cage	BFAR LGU		■	■	■	■	■				
Organization of farmers' cooperatives / associations	BFAR LGU				■	■	■	■	■		
Arrangement of loan programs for abalone culture	BFAR LGU LFI					■	■	■	■	■	■
Training on abalone culture in backyard pens/cages	BFAR						■	■	■	■	■
On-site practical training for abalone farmers	BFAR							■	■	■	■
Monitoring of abalone culture in model sites	BFAR LGU LFI						■	■	■	■	■
Evaluation of overall project	BFAR LGU					■	■	■	■	■	■

Note: BFAR: Bureau of Fisheries and Aquatic Resources. LGU: Local Government Unit, LFI: Local Financial Institution

(6) Estimated Project Cost

Project costs estimated are shown in Table 8-85 to 8-88.

1) Personnel Cost

Table 8-85: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Technical advisor	12 MM x 10 years	100,000 /MM	12,000,000	Filipino consultant (senior)
Project assistants	12 MM x 10 years x 3 people	50,000 /MM	18,000,000	Filipino consultants
Total Cost			30,000,000	

2) Facility and Equipment Cost

Table8-86: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Expansion of abalone seed production facilities at Lato-Lato Marine Hatchery	To be determined	To be determined	To be determined	The necessary cost of facility expansion is estimated in the project.
Office rental charge	2 sets x 12 months x 10 years	50,000	12,000,000	For main and liaison project offices
Office equipment	2 sets	200,000	400,000	For main and liaison project offices
Computer sets	5 sets	150,000	750,000	2 sets for project offices 3 sets for target provinces
Water quality devices	5 sets	150,000	750,000	
Materials for backyard pens/cages	15 sets	100,000	1,500,000	For pilot projects
Total Cost			15,400,000	

3) Operational Cost

Table 8-87: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field monitoring	10 days x 12 months x 2 people x 10 years	2,500 /day/person	6,000,000	Including transportation costs, meals, and allowances
Training operation	15 days x 3 people x 6 months x 4 years	2,500 /day/person	2,700,000	
Evaluation study for overall project	15 days x 3 people x 2 municipalities x 4 times	2,500 /day/person	900,000	
Total Cost			9,600,000	

4) Training and Seminar Cost

Table 8-88: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Training on abalone grow-out culture	10 trainees x 10 days x 8 times	1,500 /day/person	1,200,000	Including transportation costs, meals, and allowances
On-site practical training for abalone culture	20 trainees x 3 days x 20 times	1,000 /day/person	1,200,000	
Total Cost			2,400,000	

(7) Collaboration with Other Projects

This project plan for abalone culture promotion should be coordinated with the proposed projects for financial assistance (action plan for finance) and capacity development of producers' organizations (action plan for capacity development) described in the later part of this report.

USAID's GEM program also conducts some pilot projects on small-scale abalone culture at local fishing communities in island provinces of the ARMM. The results and experiences of the pilot projects will be utilized for the project activities.

8-4-2-2 Grouper

Project Title:
Promotion of Grouper Culture to Improve the Living Standards of Coastal Communities in the ARMM

(1) Project Summary

1) Background

Grouper is an important fisheries commodity in the island provinces of the ARMM. The promotion of grouper products in domestic and international markets is a key issue in the fishery sector because grouper is a typical high-value commodity produced in the coastal areas of the ARMM. There are still abundant resources of grouper around island areas.

However, a large portion of the grouper catch is usually processed into dried fish at fishing communities, as most artisanal fishers have no means of keeping their catch fresh. For this reason, the practice of stocking and farming live grouper in cages is gradually gaining popularity in the island provinces, especially Tawi-Tawi. Without any preservation equipment in the fishing communities, such as ice-making machines and cold storage, it makes sense for artisanal fishers to keep the groupers they capture alive in fish cages and pens for a long time.

This project plan proposes to improve the production and quality of locally cultured grouper and increase their market value.

2) Target Areas

All the provinces of the ARMM, except Lanao del Sur, have the potential for local grouper culture promotion. Tawi-Tawi province has the largest grouper production in the ARMM. In the first three years, the pilot projects of grouper culture will be conducted at appropriate sites (*barangays*) in Tawi-Tawi and Maguindanao provinces, because it is easy to obtain wild grouper seeds from local fishers. Afterward, model programs will be conducted to extend the promotion models of grouper culture to the priority municipalities, which are chosen as follows (Table 8-89):

Table 8-89: Number of Target LGUs in the Project

Main Programs	Target Areas
Pilot project (3 years)	2-3 pilot sites (*barangays*) in Tawi-Tawi 1-2 pilot sites (*barangays*) in Maguindanao
Model program (8 years)	2-3 priority municipalities in each island province (Tawi-Tawi, Sulu, and Basilan) 1-2 priority municipalities in Maguindanao

3) Target Groups

The main target group of the project is local fishers who are engaged in or intend to start grouper culture. Local farmers have to form cooperatives or associations to receive financial and technical support services from the project. Municipal LGU officers in charge of fisheries development also have the benefit of learning the basic skills of grouper culture. In each priority municipality, one to two fish farmers' cooperatives or associations are selected to participate in the model programs.

4) Project Period

The total period of the overall project is ten years.

5) Project Purpose

To increase the production of fresh and live grouper in the ARMM and raise the product's market value.

6) Expected Outcome

The project is expected to double grouper culture production in the ARMM by the time it is completed.

7) Expected Impact

Doubling grouper culture production in the ARMM—from the present 10-11 metric tons to 20-22 metric tons—will earn the industry Php 5.0–5.5 million annually.

(2) Activities

1) Selection of priority municipalities and model sites for grouper culture promotion

Several priority municipalities will be selected in all the ARMM provinces to promote grouper culture intensively. To select the proper priority municipalities which intend to promote local grouper culture, the project will request municipal LGUs to submit proposals of their candidates

for grouper culture promotion. After the candidates for priority municipalities are selected, a team of BFAR officers and local consultants will conduct field surveys on the locations to observe their geological and social condition. The priority municipalities will be selected for grouper culture promotion based on the results of the survey: one to two model sites in Maguindanao, and two to three in each island province (Tawi-Tawi, Sulu, and Basilan).

2) Strengthening of local hatchery capacity for grouper seed production

To tackle the short supply of grouper seeds, the project should reinforce grouper seed production at local marine hatcheries. At present, the Lato-Lato Marine Multi-Species Hatchery, in Tawi-Tawi is developing grouper seed production. Technical assistance and facility upgrading are carried out at the marine hatchery to improve its grouper seed production capacity.

A local expert in marine finfish culture is assigned to the hatchery to ensure the stable production of grouper seeds. The technical experts working at the hatchery are under the supervision of BFAR.

Additionally, to solve the shortage of trash fish supply for grouper culture, the project also strives to create compound feeds from local materials. A local expert for feed development is tasked with developing applicable compound feeds at Lato-Lato Marine Multi-Species Hatchery for local grouper farmers.

3) Pilot projects for grouper cage culture

Small-scale pilot projects are conducted at appropriate sites in Tawi-Tawi and Maguindanao to verify the productivity and profitability of grouper culture and identify issues and problems of grouper culture promotion. The pilot projects are a collaborative effort between BFAR and Municipal LGUs. Under the projects, conducted primarily by BFAR, small-size fish cages are installed at pilot sites and fish seeds and feeds are delivered to the sites. Fishers' organizations, such as cooperatives, which are engaged in daily farming activities, record field data of their fish culture operations. From the field data, BFAR assesses the productivity and profitability of local grouper culture at the pilot sites. Any issues and problems that arise in the pilot projects are good references for improving future technical and business operations of local grouper culture. Municipal LGUs assume the responsibility of coordinating and monitoring the field operation of pilot fish cages.

Two to three pilot sites have been selected in Tawi-Tawi province due to social stability and the security of pilot sites. Additionally, since the regular collection and analysis of field data is the

main reason for project implementation, the pilot sites are chosen for their easy access from BFAR provincial offices.

4) Organization of local grouper farmers as local business groups at model sites

To smoothly introduce loan programs and technical services for grouper culture, the project encourages fish farmers to form local business groups, such as farmers' cooperatives or associations. Ideally, a local cooperative or association comprises all local farmers engaged in grouper culture at a certain *barangay* or area.

If fish farmers' cooperatives or associations already exist at priority municipalities, they are strengthened for the introduction of financial programs and technical services for grouper culture promotion. Such organizations are expected to extend loans to and collect the payments from local farmers, and coordinate with municipal LGUs and BFAR.

5) Preparation of rental fish cages for fish farmers' groups

BEAR prepares the floating fish cages of the model programs and rents them out to fishers' groups at priority municipalities. A fish farmers' group comprises more than five local farmers. Fish farmers' groups pay cage rental fees to BFAR in several installments after the harvest. The rental fees of fish cages are determined based on the results of the pilot project.

6) Arrangement of financial schemes to support local grouper production

Various loan schemes of local financial institutions, such as government or commercial banks, are introduced to priority municipalities to support grouper farmers' operations. BFAR coordinates with municipal LGUs and local financial firms to prepare reasonable loan schemes for grouper culture promotion as a sort of business support for small and medium enterprises.

The financial institutions are expected as to provide cash loans with reasonable interest rates, targeting only farmers' cooperatives or associations, not individual farmers. Their leaders coordinate the loaning and repayment activities of their members with municipal LGUs.

7) Training on grouper culture for municipal LGU officers and local fish farmers

To promote the basic knowledge and skills required for grouper culture, technical training programs have been prepared for municipal LGU officers and local fish farmers at the priority municipalities. The training programs cover not only technical subjects, but also farm management, especially, records keeping and basic accounting for the culture business. BFAR prepares the basic plans and necessary materials of the training programs, and conducts them.

The Fisheries Training Center of BFAR Region XI (Panabo, Davao del Norte) has experienced officers and the necessary facilities to train local fish farmers on grouper cage culture. Hence the Fisheries Training Center can be effectively utilized for training programs of grouper culture in the project, especially since BFAR does not have one. The Fisheries Training Center of BFAR Region IX (Zamboanga) is also being considered for the intensive training programs for grouper culture, especially for participants from island provinces.

On-site practical training is also conducted to give local fish farmers a chance to learn the proper methods and skills involved in grouper culture. BFAR prepares and conducts the practical training at model sites of priority municipalities. The Lato-Lato Marine Multi-Species Hatchery can be also used for the training programs of grouper culture (Table 8-90).

Table 8-90: Contents of Training Programs for Grouper Culture Promotion

Training Name	Participants	Basic Contents	Training Places
Training on grouper culture development	Municipal LGU officers, municipal fisheries coordinators, fish farmer leaders	- Basic skills of cage culture - Development policy of mariculture park - Financial programs for artisanal fisheries development - Field trips to grouper culture sites, etc.	- Fisheries Training Center, BFAR Region XI (Panabo, Davao del Norte) - Fisheries Training Center, BFAR Region IX (Zamboanga)
On-site practical training on grouper culture	Local grouper farmers	- Assembling of fish cages - Feeding management - Accounting, management, etc.	Lato-Lato Marine Multi-Species Hatchery or leading grouper farms at model areas

8) Monitoring and evaluation of field activities of grouper culture promotion

After the arrangement of financial schemes and implementation of training programs, local farmers or farmers' groups start operating their grouper culture. As a result of the technical assistance and support given to Lato-Lato Marine Multi-Species Hatchery, as mentioned at Activity (2), the facility is expected to supply a certain amount of grouper seeds to fish famers' cooperatives or associations, especially in the island provinces, before the model programs of priority municipalities are started. If the grouper seed supply from the local marine hatchery falls short of the demand from local fish farmers, they have to collect wild grouper seeds in coastal waters. In Maguindanao, fish farmers can purchase and transfer grouper seeds that are artificially produced at Finfish Hatchery Inc. (Alabel, Sarangani Province), a private marine hatchery of the Alcantara Group.

To maintain their operation of grouper culture at priority municipalities, the municipal LGU officers in charge of fisheries programs and Municipal Fisheries Coordinators (MFC) regularly visit their fish cages and observe their grouper culture operations. BFAR officers also visit the priority municipalities regularly to provide local farmers with technical advice and monitor the loan repayment condition in their cooperatives and associations under the financial programs.

Moreover, to evaluate the overall progress and achievement of the model programs, BFAR officers and local consultants conduct evaluation studies every two years. The evaluation results show that the components and activities of the model program for grouper culture promotion are revised and modified to make their operation more practical for the farmers' cooperatives or associations at model sites.

At the completion of the preparation phase, the project evaluation teams, which are composed of BFAR, municipal LGUs and local financial institutes, will verify the achievements of the preparatory activities for formulation of proper extension models of grouper culture. The following indicators should be monitored and evaluated to proceed the model program phases.

- Development of technical skills of grouper seed production at local hatchery.
- Economic and technical feasibilities of applied techniques of grouper grow-out culture.
- Preparation of proper financial schemes to support grouper culture activities.
- Organization of farmers' cooperatives and associations at target municipalities.

9) Support for the establishment of community-based fish landing places

The project promotes the development community-based fish landing places to maintain the quality of grouper products and ensure the smooth distribution of grouper products to the markets. The proposed fish landing places include such items as fish sorting areas, fish stock tanks, ice storage, and fish sale stalls. The target fishing communities have to render voluntary labor in the construction of such facilities. The construction costs will be drawn from the budgets of municipal LGUs, the ARMM Social Fund, or other financial assistance schemes. To encourage municipal LGUs to invest in and construct fish landing places, BFAR prepares the basic plans for the facilities at the priority municipalities, employing local design engineers. Local materials, such as bamboo sticks and wooden boards, should be used to reduce the construction cost.

The schematic diagram describing implementation flow of the establishment of community-based fish landing places is shown in Figure 8-10.

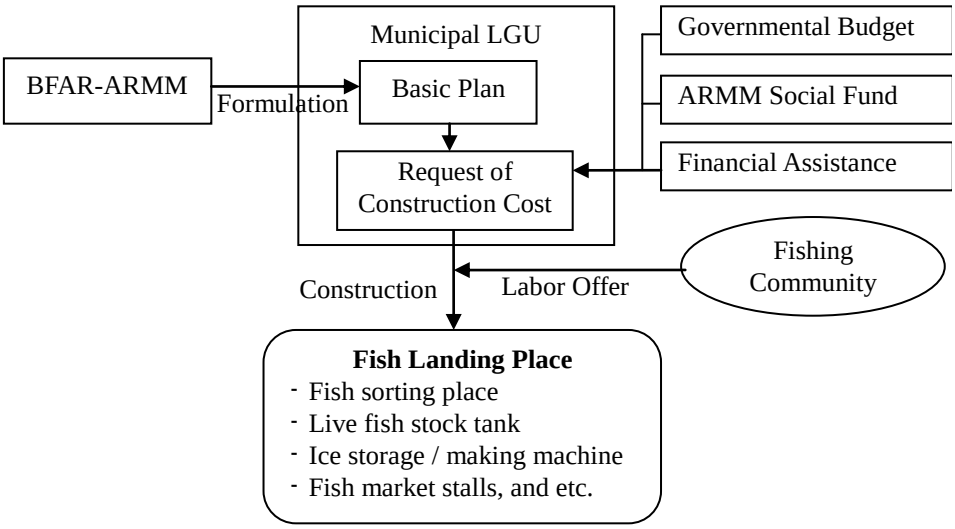


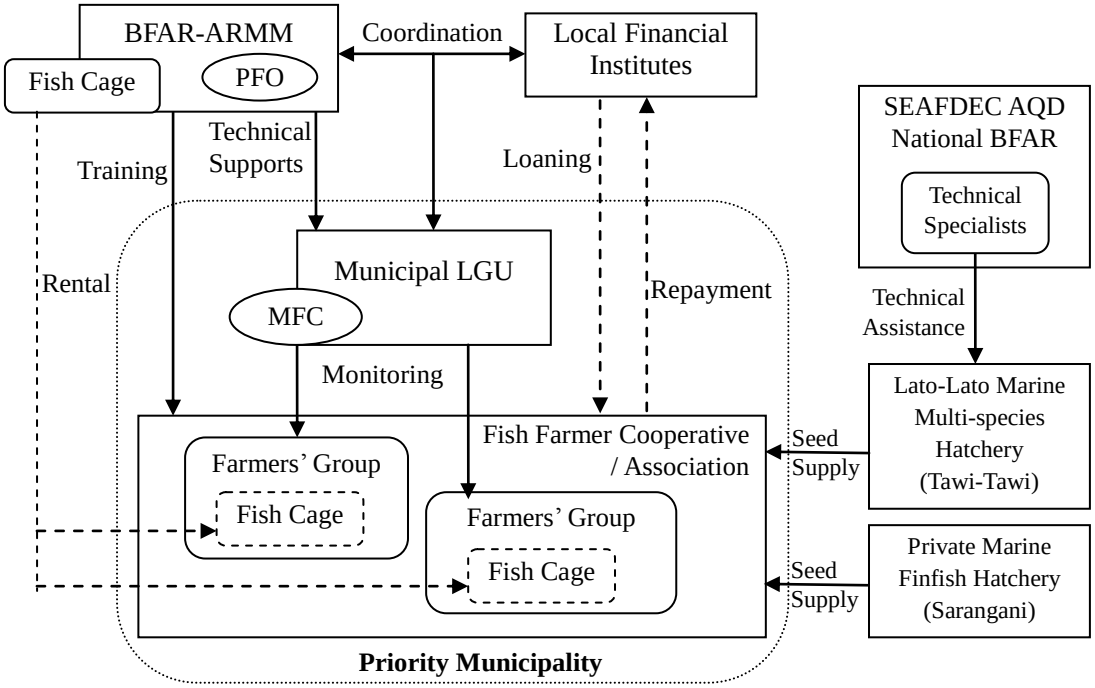
Figure 8-10:
Implementation Flow of the Establishment of Community-Based Fish Landing Places

(3) Management Plan

1) Project Management Structure

The main project office will be at Cotabato City to facilitate communication with the BFAR head office. Seiner technical advisers and local consultants will use the main office to operate and coordinate the project activities with BFAR. BFAR takes charge of the overall coordination of project activities. In particular, Provincial Fisheries Officers (PFOs) and Municipal Fisheries Coordinators (MFCs) handle the monitoring activities on model sites in the target provinces and priority municipalities. In the priority municipalities, municipal LGU officers also take the responsibility of coordinating with and monitoring local fish farmers at the model sites. Local financial institutions, such as government or commercial banks, offer financial schemes for the small-scale business groups, such as cooperatives or associations, which are organized by local grouper farmers. In principle, the financial institutions provide loans to fish farmers' groups and collect their repayments. The farmers' cooperatives or associations are expected handle the loaning to and collecting repayments from fish farmers (Figure 8-11).

BFAR also evaluates pilot projects and model programs and conducts field studies with local consultants to gather and analyze important indicators and information on field activities.



PFO: Provincial Fisheries Officer
MFC: Municipal Fisheries Coordinator (working under PFO)
SEAFDEC AQD: Southeast Fisheries Development Center Aquaculture Department

Figure 8-11: Implementation Structure of Grouper Culture Promotion

2) Personnel Plan

Various local personnel are needed to carry out the project activities (Table 8-91). For the smooth coordination of overall programs and proper monitoring of technical and financial services, a local senior-level consultant is posted as technical adviser in the project. He carries out overall project activities in coordination with BFAR, municipal LGUs, and local financial institutions. In addition, local technical experts in grouper seed production and feed development for grouper grow-out culture are assigned to the Lato-Lato Marine Multi-Species Hatchery. The South-East Fisheries Development Center Aquaculture Division (SEAFDEC-AQD) or National BFAR Centers may opt to dispatch local specialists to these technical fields.

Table 8-91: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Technical advisor	1	12 MM x 10 years	Filipino consultant (senior)
Expert in grouper seed production	1	10 MM x 3 years	Filipino consultant (SEAFDEC-AQD, National BFAR Center, etc.)
Expert in feed development	1	8 MM x 2 years	Filipino consultant (SEAFDEC-AQD, National BFAR Center, etc.)
Project assistant in the main office (Cotabato City)	1	12 MM x 10 years	Filipino consultant
Project assistants in the liaison office (Zamboanga City)	2	12 MM x 10 years	Filipino consultants
Project coordinator	1	12 MM x 10 years	BFAR-ARMM
Field officers (monitoring activities at the provincial level)	5	1 MM x 10 years	Provincial Fisheries Officers (BFAR) at 5 target provinces
Field officers (monitoring activities at the municipal level)	15	1 MM x 10 years	Municipal Fisheries Coordinators (BFAR) or Municipal LGU Officers at priority municipalities
Hatchery engineers	3	12 MM x 3 years	Lato-Lato Marine Multi-Species Hatchery
Fisheries facilities planners	2	12 MM x 4 years	Local Design Engineers
Financial program managers (management/monitoring at the regional level)	2	2 MM x 4 years	Staff in charge of Small and Medium Enterprises (SMEs) in local financial institutions
Financial program coordinators (management/monitoring at the provincial level)	3	1 MM x 10 years	Staff in charge of SMEs at provincial branches of local financial institutions
Officers of cooperative development (support in organizing local fishers/farmers)	3	When required	Provincial CDA Officers in target provinces
Training lecturers	5	When required	BFAR-ARMM, Lato-Lato Multi-Species Hatchery (Tawi-Tawi), Fisheries Training Centers in BFAR XI (Panabo) and BFAR IX (Zamboanga)

(4) Necessary Inputs

Facilities and equipment plans are shown in Tables 8-92 and 8-93.

1) Facility Plan

Table 8-92: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Main project office	Office space in Cotabato City	4-5 persons	For coordination of overall programs with BFAR-ARMM
Liaison project office	Office space in Zamboanga City	2-3 persons	For coordination with the programs of island provinces
Lato-Lato Marine Multi-Species Hatchery	Grouper seed production facilities		Rehabilitation of hatchery facilities, if necessary

2) Equipment Plan

Table 8-93: Equipment Plan

Equipment	Quantity	Specification	Remarks
Fish cage material	50	Bamboo sticks, floats, nets, ropes, etc.	Assembling of rental cages
Office equipment	2	Copier, fax machine, desk, and chair	For project offices
Computer sets	5	Computer, printer, scanner, etc.	2 sets for project offices 3 sets for target provinces
Water quality devices	5	PH meter, DO meter, etc.	

(5) Plan of Operation

The first three years of the project roughly comprise the preparation phase, including a pilot project and rehabilitation work on a marine hatchery facility; and the next eight years, a model program of grouper culture promotion. The model program includes two phases (one phase in five years), which are overlapped in the project period (Table 8-94).

Table 8-94: Plan of Operation

Activities	Agency	Year									
		1	2	3	4	5	6	7	8	9	10
Project operational phases		Preparation Phase					2nd Phase of Model Program				
				1st Phase of Model Program							
Selection of priority municipalities	BFAR										
Expansion of Lato-Lato Marine Hatchery facility	BFAR										
Pilot project of grouper grow-out culture in cages	BFAR LGU										
Development of grouper seed production skills	BFAR LGU										
Development of locally made feed for grow-out culture	BFAR										
Preparation of rental fish cages	BFAR										
Organization of farmers' cooperatives/associations	BFAR LGU										
Arrangement of loan schemes for grouper culture	BFAR LGU LFI										
Training for grouper culture in fish cages	BFAR										
On-site practical training for grouper culture	BFAR										
Monitoring of grouper culture in model sites	BFAR LGU LFI										
Formulation of a blueprint of community-based facilities	BFAR LGU										
Evaluation of overall model program	BFAR LGU										

Note: BFAR: Bureau of Fisheries and Aquatic Resources

LGU: Local Government Unit; LFI: Local Financial Institution

(6) Estimated Project Cost

Project costs estimated are shown in Tables 8-95 to 8-98.

1) Personnel Cost

Table 8-95: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Technical advisor	12 MM x 10 years	100,000/MM	12,000,000	Filipino consultant (senior)
Expert in grouper seed production	10 MM x 3 years	100,000/MM	3,000,000	Filipino consultant (technical)
Expert in feed development	8 MM x 2 years	100,000/MM	1,600,000	Filipino consultant (technical)
Project Assistants	12 MM x 10 years x 3 persons	50,000/MM	18,000,000	Filipino consultant
Fisheries facility planners	12 MM x 2 persons x 4 times	100,000/MM	9,600,000	Local design engineers
Total Cost			44,200,000	

2) Facility and Equipment Cost

Table 8-96: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office rental fee	12 months x 10 years x 2 offices	50,000	12,000,000	2 offices for the project
Office equipment	1 sets x 2 offices	200,000	400,000	
Computer sets	5 sets	150,000	750,000	2 sets for project offices, 3 sets for target provinces
Water quality devices	5 sets	150,000	750,000	
Fish cages	3 sets	200,000	600,000	For pilot projects at 1st phase
Boat with engine	1 set	200,000	200,000	
Fish cages for rental (small-size set)	50 sets	100,000	5,000,000	For model programs at 2nd phase
Total Cost			19,700,000	

3) Operational Cost

Table 8-97: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field preparation and monitoring	10 days x 12 month x 2 persons x 10 years	2,500 /day-person	6,000,000	Including transportation costs, meals, and allowances
Training operation	15 days x 3 persons x 6 months x 4 years	2,500 /day-person	2,700,000	
Evaluation study for overall model programs	15 days x 3 persons x 5 municipalities x 4 times	2,500 /day-person	2,250,000	
Total Cost			10,950,000	

4) Training and Seminar Cost

Table 8-98: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Training on grouper culture development	15 participants x 10 days x 8 times	1,500 /day-person	1,800,000	Including transportation costs, meals, and allowances
On-site practical training on grouper culture	15 participants x 3 days x 15 times	1,000 /day-person	675,000	
Total Cost			2,475,000	

(7) Collaboration with Other Projects

The action plan for grouper culture promotion has to be coordinated with the proposed action plans of micro-financial promotion (action plan of finance) and capacity development for producer's groups (action plan of capacity development) in the later part of this report. Moreover, the action plan can be coordinated with the GEM program (Growth with Equity in Mindanao) or the FISH program (Fisheries Improvement for Sustainable Harvest) conducted by the United States Agency for International Development (USAID).

8-4-2-3 Milkfish

Project Title:
Development of Milkfish Culture to Improve Living Standards of Coastal Communities in the ARMM

(1) Project Summary

1) Background

Milkfish is the most popular fish in the Philippines. However, milkfish production in the ARMM is very limited, and not sufficient for consumption in the region. In the ARMM, milkfish are commonly farmed in earthen ponds in extensive systems. Therefore, the productivity of fish ponds is low, and the quality of cultured milkfish is also low.

To increase local production of milkfish and improve the quality of cultured milkfish, the proposed project endeavors to introduce semi-intensive culture and fish cage culture to farm milkfish gradually.

2) Target Area

The target areas for the proposed project are Maguindanao, Lanao del Sur, and Basilan provinces. The pilot project for milkfish culture is conducted at only two to three model sites in Maguindanao province because it is easy to access pilot sites to monitor field activities and collect necessary information. Two to three priority municipalities are selected in each target province for implementation of the model programs of milkfish culture promotion after the pilot project (Table 8-99).

Table 8-99: Number of Target LGUs in the Project

Main Programs	Target Areas
Pilot project (3 years)	2-3 model sites (barangay) in Maguindanao provinces
Model programs (8 years)	2-3 priority municipalities in each provinces (Maguindanao, Lanao del Sur and Basilan)

3) Target Group

The project's target group is local fish farmers' organizations engaged in milkfish culture. Municipal LGU officers in charge of local fisheries programs are also beneficiaries of the project as they learn quality control and the basic skills of milkfish culture and processing.

Basically, in each priority municipality, two to three farmers' organizations, such as cooperatives or associations, are also selected to participate in the model programs.

4) Project Period

Total of ten years for the overall projects

5) Project Purpose

The milkfish culture production is increased in the ARMM by the introduction and extension of semi-intensive and cage culture in the project.

6) Expected Outcome

Milkfish culture production is increased 50 % in target provinces by the completion of the project.

7) Expected Impact

The project is expected to increase the regional milkfish production by at least 50 %, especially in Maguindanao province. Since annual milkfish production in the ARMM was about 3,600 metric tons in 2009, it will reach 5,400 metric tons at the completion of the project. This means that the project will make an economic contribution to the ARMM of about Php 540 million annually in the future.

(2) Activities

1) Selection of priority municipalities and model sites for milkfish culture promotion

Several priority municipalities are selected as model sites in the target provinces to promote a stable business model for intensive milkfish culture. To select proper priority municipalities which intend to pro-actively promote milkfish culture, the project requests that municipal LGUs submit proposals presenting their ideas and plans for milkfish production promotion. After selecting candidates for the priority municipalities, BFAR-ARMM conducts field surveys of the candidate municipalities with local consultants to confirm the actual geological and social conditions for milkfish culture. Priority municipalities are then selected based on the results of the field surveys. Basically, two to three priority municipalities in each target province (Maguindanao, Lanao del Sur, and Basilan) are selected as model sites.

2) Pilot project on milkfish pond and cage culture

Small-scale pilot projects are conducted at two to three sites (barangays) in Maguindanao province to verify the productivity and profitability of semi-intensive milkfish culture, and

identify issues and constraints of milkfish culture promotion. Feed costs are the most essential issue to local fish farmers in introducing semi-intensive pond and cage culture. To reduce the feed costs as much as possible, local materials should be identified to make up milkfish feed. Fermented rice bran is well-known as an effective but inexpensive local-made feed for milkfish culture.

The fish farmers who participate in the pilot project are responsible for recording field data on their fish culture operation. Based on the collected field data, BFAR evaluates the productivity and profitability of semi-intensive pond and cage culture. Any issues and problems occurring in the pilot projects are good references in improving future technical and business operations of local milkfish culture. Municipal LGUs take responsibility for coordinating and monitoring the field operations of pilot fish ponds and cages.

Brackish-water fish ponds at the site of the Aqua-Silviculture Demonstration Project (Municipality of Parang in Maguindanao), implemented by BFAR, can also be used for the pilot project for milkfish culture.

3) Organization of local milkfish farmers as local business groups at model sites

To introduce financial programs and technical services for promoting milkfish culture at the priority municipalities, the project makes efforts to organize milkfish farmers into local business organizations, such as cooperatives or associations. If fish farmers' business organizations already exist in the priority municipalities, the existing organizations are utilized and strengthened to introduce proper financial programs. Local farmers' organizations are expected to take responsibility for loans, repayment of local farmers, and coordinating with municipal LGUs and BFAR officials.

4) Arrangement of financial programs for milkfish culture promotion

Proper loan schemes for local financial institutes, such as government or commercial banks, are introduced to model municipalities to support milkfish farmers' operations. BFAR coordinates between municipal LGUs and local financial institutes to introduce loan schemes for milkfish farmers' organizations as small-and-medium enterprises.

Those financial institutions provide low interest loans only to fish farmers' cooperatives or associations, not directly to individual farmers. In addition, local fish farmers should form a small group composed of more than five farmers in order to receive loans from their cooperatives or associations and repay them jointly with their collective responsibilities. Since

most local farmers do not have sufficient collateral, memberships in farmer's organizations are necessary conditions for obtaining loans as part of the guarantee.

5) Training programs for milkfish culture promotion

To promote basic ideas and skills for semi-intensive pond and cage culture, intensive training programs are prepared and conducted for municipal LGUs and local fish farmers in model municipalities. The training programs cover not only technical matters, but also management skills, especially record-keeping and accounting for fish culture operations.

The project prepares training programs for municipal LGU officers and fish farmer leaders and on-site practical training on proper culture skills for local fish farmers. In addition, training programs on milkfish processing for value-added production are also conducted for LGU officers and local groups of female fish farmers (Table 8-100).

The Fisheries Training Center of BFAR Region XI (Panabo, Davao del Norte) has experienced officers and the necessary facilities to train local fish farmers on milkfish pond or cage culture and milkfish processing. Hence, the Fisheries Training Center can be effectively utilized for the training programs on milkfish culture and processing in the project since BFAR does not have a training center and facilities.

Additionally, the site of the Aqua-Silviculture Demonstration Project of BFAR can be utilized as a place for practical training programs, especially for local fish farmers in Maguindanao and Lanao del Sur provinces.

Table 8-100: Content of Training Programs for Milkfish Culture Promotion

Training	Participants	Contents	Places
Training on milkfish pond and cage culture	Municipal LGU officers, Municipal Fisheries Coordinators, Local milkfish farmers' leaders	- Basic skills for semi-intensive culture - Making and feeding of fermented rice bran - Field trip to milkfish pond and cage culture, etc.	Fisheries Training Center, BFAR Region XI (Panabo, Davao del Norte)
On-site practical training on milkfish culture	Local milkfish farmers	- Assembling of fish cages - Preparation of fish ponds - Making and feeding of fermented rice bran - Management of accounting and organizations, etc.	Aqua-Silviculture Demonstration Project Site (Parang, Maguindanao), or Leading milkfish farms at model sites in priority municipalities
Training on milkfish processing	Municipal LGU officers, Municipal Fisheries Coordinators, Local groups of female milkfish farmers	- Processing of boneless fish - Processing of marinated fish - Processing of smoked fish, etc.	Fisheries Training Center, BFAR Region XI (Panabo, Davao del Norte)

6) Monitoring and evaluation of field activities of local milkfish culture

After the arrangement of loan schemes and the implementation of training programs, local farmer groups start operating semi-intensive milkfish culture at their own ponds and cages. In pilot projects, local fish farmers basically have to prepare the necessary capital and operational costs for pond and cage fish culture using their own funds and bank loans.

To promote milkfish cage culture with low initial capital, the project prepares the necessary materials for fish cages, which are rented to fish farmers' cooperatives or associations. Using what they learned in the training programs, fish farmers assemble fish cages from the materials provided, such as nets, ropes, and floats, by themselves. They repay the cost of the material for fish cages to the project or BFAR several points after the harvest. The repaid money is utilized to purchase more material to introduce additional rental fish cages in the model areas.

Basically, sufficient milkfish seeds can be obtained from local fish fry collectors. In the off season for milkfish fry collection, fish seeds should be purchased and carried from private milkfish hatcheries or nurseries located around General Santos or Davao. In particular, Finfish Hatchery Inc. (Alabel, Sarangani Province) of the Alacantara Group is a possible source of milkfish seed supply because it is the largest milkfish seed producer in the Philippines.

To maintain local farmers' operation of milkfish culture at model sites in priority municipalities, municipal LGU officers in charge of fisheries programs and Municipal Fisheries Coordinators (MFC) regularly visit their fish ponds and cages and observe their milkfish culture operations. BFAR officers also visit the priority municipalities regularly to provide technical advice to local fish farmers, and monitor the repayment conditions for financial programs through their cooperatives or associations.

Moreover, to evaluate the overall progress and achievement of the model programs, BFAR conducts evaluation studies with local consultants every two years. The components and activities of the model program for milkfish culture promotion are revised and modified according to the evaluation results so that they can be more practically operated with local farmers' organizations on model sites.

At the completion of the preparation phase, the project evaluation teams, which are composed of BFAR, municipal LGUs and local financial institutes, will verify the achievements of the preparatory activities for formulation of proper extension models of milkfish culture. The following indicators should be monitored and evaluated to proceed onto the model program phases.

- Economic and technical feasibilities of improved techniques of milkfish grow-out culture.
- Preparation of proper financial schemes to support milkfish culture activities.
- Organization of farmers' cooperatives and associations at priority municipalities.

(3) Management Plan

1) Project Management Structure

The main project office is located in Cotabato City to ensure smooth communication with the BFAR head office. A technical adviser and project assistants engaged in the project work at the main office to operate and coordinate the project activities, which cover Maguindanao and Lanao del Sur provinces.

BFAR takes charge of overall coordination of project activities. In particular, the Provincial Fisheries Officers (PFO) and Municipal Fisheries Coordinators (MFC) mainly work on monitoring activities on model fish culture sites in the respective target provinces and priority municipalities. In the priority municipality, municipal LGUs also take responsibility for coordinating and monitoring local fish farmers at model sites.

Local financial institutions, such as governmental or commercial banks, prepare and offer proper loan schemes for local fish farmers' business organizations, such as cooperatives or associations. Basically, those financial institutions provide loans to fish farmers' cooperative or associations, and collect repayments from them. Local fish farmers' cooperatives or associations are expected to coordinate loans and repayment from milkfish farmers' groups. The image of implementation structure for milkfish culture promotion is shown in Figure 8-12.

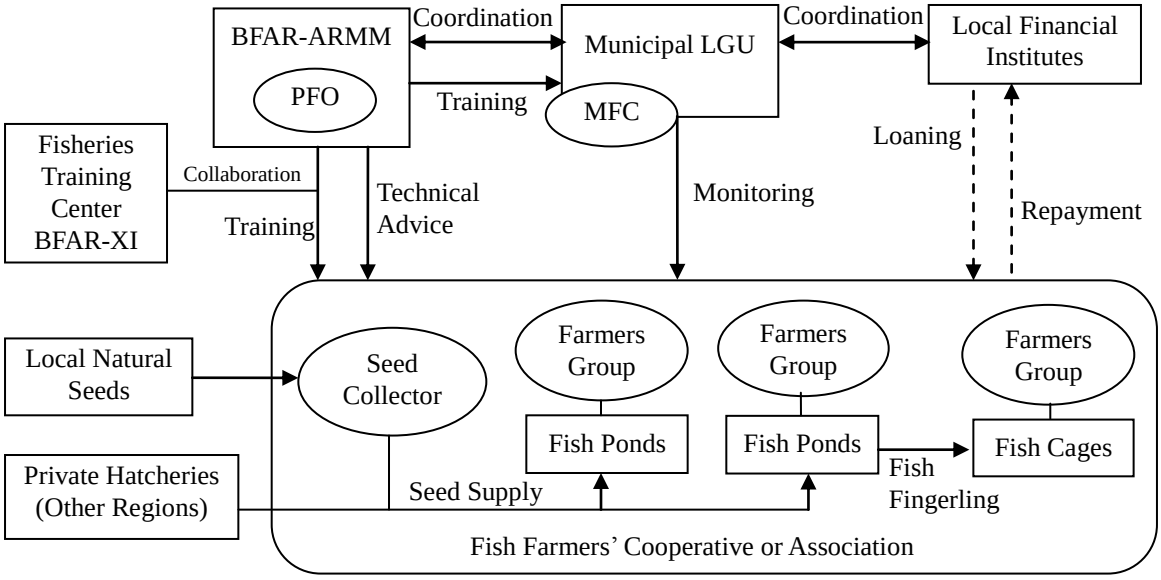


Figure 8-12: Image of Implementation Structure for Milkfish Culture Promotion in the ARMM

Note: PFO: Provincial Fisheries Officer, MFC: Municipal Fisheries Coordinator

2) Personnel Plan

The following local personnel are necessary to carry out all project activities. To coordinate the overall programs smoothly and monitor technical and financial services properly, a local senior consultant is posted as technical adviser to the project. He manages to carry out overall project activities in coordination with BFAR, municipal LGUs, and local financial institutions. Local project assistants are also posted at the project offices to take charge of logistics and support field activities (Table 8-101).

Table 8-101: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Technical advisor	1	12 MM x 10 years	Filipino consultant (senior)
Project assistants	2	12 MM x 10 years	Filipino consultant
Project coordinator	1	12 MM x 10 years	BFAR-ARMM
Field officers for monitoring at provincial level	3	1 MM x 10 years	Provincial Fisheries Officer (BFAR) at target provinces
Field officers for monitoring at municipal level	8-10	1 MM x 10 years	Municipal Fisheries Coordinators (BFAR) and municipal LGU officers at priority municipalities
Financial program manager (management/monitoring at regional level)	1	2 MM x 4 years	Staff in charge of SME in local financial institutions
Financial program coordinators (management/monitoring at provincial level)	2	1 MM x 10 years	Bank staff in charge of SME at provincial branches of local financial institutions
Quality control adviser	1	When required	Technician of local milkfish processing factory
Cooperative development officers (to support fish farmers' cooperatives)	2	When required	Provincial CDA Officers
Training lecturers	10	When required	BFAR-ARMM, Fisheries Training Center (BFAR Region XI) or Other institutes

(4) Necessary Inputs

Facilities and equipment plans are shown in Tables 8-102 and 8-103.

1) Facility Plan

Table 8-102: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Project office	Office space in Cotabato City	4-5 persons	
Fish ponds	Earthen fish ponds (500-1000 m^2 x 4) at pilot sites	2.0 ha	Rehabilitation of model fish ponds for the pilot project
Fish cages	Fish cages (10 m x 10 m) at pilot sites	3 units	Introduction of fish cages for pilot project

2) Equipment Plan

Table 8-103: Equipment Plan

Equipment	Quantity	Specification	Remark
Office equipment	1	Copier, fax machine, desk, chairs and etc.	1 set for main project office
Computer sets	3	Computer, printers, and scanner	1 set for project office, 2 sets for each target provinces
Water quality devices	3	pH meter, Do meter, etc.	
Boat with engine	3	Pump boats	For pilot project operations at pilot sites
Material for rental fish cages	20	Nets, ropes, floats, bamboo sticks, etc.	For assembling rental fish cages for model programs

(5) Plan of Operation

The project consists roughly of a preparation phase (three years) and implementation phases (eight years) of milkfish culture promotion. The implementation phase consists of two sub-phase model programs (one sub-phase in five years), which overlap in the middle of the project period. The first sub-phase is mainly carried out in Maguindanao and Basilan provinces. In the second sub-phase, the priority municipalities of Lanao del Sur province will be added for the target areas of the model programs (Table 8-104).

Table 8-104: Operation Plan

Activities	Agency	Year									
		1	2	3	4	5	6	7	8	9	10
Operational Phase of the Project		Preparation Phase					2nd Phase of Model Program				
				1st Phase of Model Program							
Selection of model sites and priority municipalities	BFAR	■	■	■							
Pilot project for milkfish culture at ponds / cages	BFAR LGU		■	■	■	■	■				
Organization / strengthening of farmers' cooperatives	BFAR LGU				■	■	■	■			
Arrangement of loan schemes for milkfish production	BFAR LGU LFI				■	■	■	■	■		
Training on semi-intensive milkfish culture	BFAR					■	■	■	■		
On-site practical training for milkfish farmers	BFAR						■	■	■	■	
Training on milkfish processing	BFAR									■	
Monitoring of milkfish farming in model sites	BFAR LGU LFI				■	■	■	■	■	■	■
Evaluation of overall model program	BFAR LGU					■			■		■

Note: BFAR: Bureau of Fisheries and Aquatic Resources

LGU: Local Government Unit, LFI: Local Financial Institute

(6) Estimated Project Cost

Project costs are estimated as shown in Tables 8-105 to 8-108.

1) Personnel Cost

Table 8-105: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Technical advisor	12 MM x 10 years	100,000/MM	12,000,000	Filipino consultant (senior)
Project assistants	12 MM x 10 years x 2 persons	50,000/MM	12,000,000	Filipino consultant
Total Cost			24,000,000	

2) Facility and Equipment Cost

Table 8-106: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office rental fee	12 months x 10 years	50,000	6,000,000	Office in Cotabato City
Office equipment	1 sets	200,000	200,000	
Computer sets	3 sets	150,000	450,000	1 set for a project office 2 sets for target provinces
Water quality devices	3 sets	150,000	450,000	
Fish pond rehabilitation	2.0 ha	300,000	600,000	For pilot project
Fish cage	3 sets	200,000	600,000	
Boat with engine	3 set	200,000	600,000	
Materials for rental fish cages	20 sets	200,000	4,000,000	For rental fish cages at model programs
Total Cost			12,900,000	

3) Operational Cost

Table 8-107: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field preparation and monitoring	10 days x 12 month x 2 persons x 10 years	2,500/day-person	6,000,000	Including transportation costs, meals, and allowances
Training operation	15 days x 3 persons x 6 months x 4 years	2,500/day-person	2,700,000	
Evaluation study for overall model programs	15 days x 3 persons x 3 municipalities x 4 times	2,500 /day-person	1,350,000	
Total Cost			10,050,000	

4) Training and Seminar Cost

Table 8-108: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remark
Training on milkfish pond and cage culture	15 participants x 10 days x 8 times	1,500 /day-person	1,800,000	Including transportation costs, meals, and allowances
On-site practical training on milkfish culture	15 participants x 3 days x 15 times	1,000 /day-person	675,000	
Training on milkfish processing	15 participants x 10 days x 4 times	1,500 /day-person	900,000	
Total Cost			3,375,000	

(7) Collaboration with Other Projects

This project plan for milkfish culture promotion should be coordinated with the proposed project plan for financial assistance (action plan for finance) and capacity development for producers' organizations (action plan for capacity development) described in the later part of this report.

JICA conducted a technical cooperation project for improving nation-wide milkfish culture extension (COFBreP: Comprehensive Outreach and Fish Breeding Project, 2008-2010) at the National Integrated Fisheries Technology Development Center, Dagupan City. The outputs and resources of the JICA cooperation project can contribute to support and promote this project plan.

Recently, the USAID's GEM programs (Growth with Equity in Mindanao) has introduced a fish cage unit at Parang Bay in Maguindanao as a pilot project for milkfish cage culture. The project may work with the GEM program on milkfish promotion in the future.

8-4-2-4 Mud Crab

Project Title:
Development of Mud-Crab Culture to Improve the Living Standard of Coastal Communities in the ARMM

(1) Project Summary

1) Background

Mud crab is a high-value fisheries product and is commonly cultured at brackish-water ponds in coastal areas of Maguindanao and Basilan provinces. Mud crabs are produced extensively in the ARMM, since mud crabs naturally grow in ponds feeding only on natural food. In spite of low production cost and simple pond management, the sizes of harvested crabs differ greatly. Moreover, their survival rate is very low, because cannibalism occurs easily in ponds if there is a shortage of their feed. To improve the productivity and quality of cultured mud crabs, the project intends to demonstrate and introduce semi-intensive methods for mud-crab culture to local farmers.

2) Target Areas

The main target areas for the proposed project will be Maguindanao, Lanao de Sur, and Basilan provinces. At first, a pilot project of mud-crab culture will be conducted at only two or three model sites in Maguindanao province, where it is easy to obtain mud-crab seeds at natural mangrove areas and to monitor the field activities. After the completion of the pilot project, the model programs for promotion of mud-crab culture will be conducted at one or two selected priority municipalities in each target province (Table 8-109).

Table 8-109: Number of Target LGUs in the Project

Main Programs	Target Areas
Pilot project (3 years)	Two or three model sites (barangay) in Maguindanao
Model programs (8 years)	One or two priority municipalities in each target province (Maguindanao, Lanao del Sur, and Basilan)

3) Target Group

The main target group of the proposed project is local farmers who are engaged in or intend to start mud-crab culture. Local farmers participating in the project will need to have their own brackish-water ponds to culture mud crabs. In addition, they will need to form their own

cooperatives or associations to receive and coordinate financial and technical services in the project. Municipal LGU officers in charge of fisheries development will benefit from the project by learning the basic skills of mud-crab culture. In each priority municipality, one or two fish farmers' organizations, such as cooperatives and associations, will also be selected to participate in the second phase.

4) Project Period

A total of ten years will be necessary for the overall project.

5) Project Purpose

Productivity and quality of cultured mud crabs in the ARMM are improved by an introduction of semi-intensive culture methods.

6) Expected Outcome

- The production of cultured mud crabs in a unit area of ponds is doubled (200 to 300 kg/ha/year).
- The quality of harvested mud crabs in ponds reaches the export level.

7) Expected Impact

When the project has increased the average productivity of mud-crab culture up to 300 kg/ha/year, the annual production of mud crab may reach 3 to 6 tons in a priority municipality, assuming that the pond area for mud-crab culture is 10 to 20 ha. Since the model program is planned to be carried out in five municipalities, the total annual production of the region is expected to be 50 to 100 tons. Therefore, the project of mud-crab promotion may generate Php 10 to 20 million every year in production value to the regional economy.

(2) Activities

1) Selection of priority municipalities and model sites for mud-crab culture promotion

Several priority municipalities will be selected in the target provinces, Maguindanao, Lanao del Sur, and Basilan, in order to promote mud-crab culture using a local business model. To select priority municipalities that intend to promote mud-crab culture positively, the project will ask municipal LGUs to submit proposals presenting their ideas and plans for mud-crab culture promotion. After selecting candidates for being priority municipalities, a team of BFAR-ARMM officers and local consultants will conduct field surveys in candidate areas. Given the results of the surveys, priority municipalities for mud-crab culture will be chosen. Depending on the seed supply for mud crabs in coastal watershed areas, one or two priority municipalities in each

target province will be selected for the future model programs.

2) Pilot projects of semi-intensive mud-crab culture

First of all, small-scale pilot projects will be conducted at one or two appropriate sites (barangay level) to verify the productivity and profitability of semi-intensive mud-crab culture. Moreover, the pilot projects will identify important issues and problems with operations and business in mud-crab production. The pilot projects will be prepared and carried out at selected sites in Maguindanao province, because collection of mud-crab seeds in its coastal watershed areas should be easy. Brackish-water fish ponds at the Aqua-Silviculture Demonstration Project (Municipality of Parang in Maguindanao), implemented by BFAR, can be also used for the pilot project for mud-crab culture.

To introduce semi-intensive mud-crab culture, a stable supply of trash fish will be very important. Local farmers collect trash fish every day to feed to mud crabs in ponds. Prior to the pilot projects, the project should rehabilitate brackish-water ponds and set net fences to enclose the ponds.

The farmers who participate in the pilot project will need to take responsibility for recording field data of their mud-crab culture operation. Given the collected field data, BFAR will evaluate the possible productivity and profitability of semi-intensive mud-crab culture. Any issues and problems that occur during the pilot project will provide data to improve the future technical and business operations of local mud-crab culture. Municipal LGUs will need to take responsibility for coordinating and monitoring the field activities of the pilot project on mud-crab culture.

3) Organization of local mud-crab farmers as local business groups

To introduce financial programs and technical services for mud-crab culture smoothly, the project will encourage local mud-crab farmers to form local business organizations, such as farmers' cooperatives or associations. Ideally, a local farmers' organization will include all stakeholders engaged in mud-crab culture within each barangay or area, such as natural seed collectors and brackish-water pond growers.

If farmers' business organizations already exist in priority municipalities, the existing organizations will be strengthened to introduce financial programs and technical services for mud-crab culture promotion. The farmers' cooperatives or associations will be expected to take responsibility for loans to and repayments by local farmers and for coordinating with municipal

LGUs and BFAR. Moreover, the farmers' cooperatives or associations should have additional functions in order to control the quality of cultured mud crabs for sale to domestic and international markets.

In addition, the local farmers' organizations should be empowered to manage the resources of natural mud crabs in the local coastal and mangrove areas. Specifically, the farmers' organizations would control regular crab-seed collection and would manage the volume of crab-seed collection by groups.

4) Arrangement of financial programs for mud-crab culture promotion

Appropriate loan programs will be arranged with local financial institutions, such as government or commercial banks, in the priority municipalities to support mud-crab farmers' operations. BFAR will coordinate with municipal LGUs and local financial institutions to prepare reasonable loan programs for mud-crab culture promotion as a type of business support for small-medium enterprises.

Local financial institutions will be expected to provide cash loans with reasonable interest rates, but only to farmers' cooperatives or associations, not to individual farmers directly. The leaders of the cooperatives or associations will be expected to coordinate loans to and repayments by their member farmers with municipal the LGUs.

5) Training programs for mud-crab culture promotion

To promote the basic ideas and skills needed for semi-intensive mud-crab culture, intensive technical training programs will be prepared for municipal LGU officers and local farmers' leaders in the priority municipalities. The training programs will cover not only technical subjects, but also farming management, especially record keeping and the basic accounting needed for a culture business. BFAR will prepare the basic plans and necessary materials for the training programs and will conduct them at suitable locations. The Regional Fisheries Research and Development Center for Marine and Brackish-Water Fisheries (RFRDC-MBF), which belongs to BFAR Region XI (Davao), will be a candidate to be a location for the technical training programs on mud-crab culture (Table 8-110).

On-site practical training will also be conducted to train local fishers in the methods and skills needed for semi-intensive mud-crab culture at actual production sites. BFAR will prepare and conduct the practical training at model sites in priority municipalities. The Aqua-Silviculture Demonstration Project Site (Parang, Maguindanao) of BFAR can be used as a site for practical

training programs targeted at local farmers of Maguindanao.

Table 8-110: Contents of Training Programs for Mud-Crab Culture Promotion

Training Title	Participants	Contents	Places
Training in mud-crab culture in brackish-water ponds	Municipal LGU officers, Municipal Fisheries Officers, Local farmers' leaders of model sites	- Basic skills of mud-crab culture - Semi-intensive culture in ponds - Feeding management - Aqua-silviculture system - Field trips to mud-crab culture sites, etc.	RFRDC-MBF (BFAR Region XI, Tagabuli, Davao del Sur) or other public fisheries institutions
On-site practical training in mud-crab culture	Mud-crab farmers of priority municipalities	- Semi-intensive culture of mud crab - Feeding management - Aqua-silviculture - Practical record keeping, etc.	Aqua-Silviculture Demonstration Project Site (BFAR-ARMM), or suitable model sites in priority municipalities

6) Monitoring and evaluation of field activities of mud-crab culture promotion

After the financial programs have been arranged and the training programs implemented, local farmers or farmers' groups will start their operation of mud-crab culture. To maintain the operation of mud-crab culture at priority municipalities, municipal LGU officers in charge of fisheries programs and Municipal Fisheries Coordinators (MFC) will regularly visit their brackish-water ponds and observe their mud-crab culture operations. BFAR officers will also visit the priority municipalities regularly to supply technical advice to local farmers, and to monitor repayments of loans through their cooperatives and associations.

Moreover, to evaluate the overall progress and achievement of the project, BFAR officers will conduct evaluation studies with local consultants approximately every two years. Given the evaluation results, the components and activities of the model program for mud-crab culture promotion will be revised and modified to be more practical for the farmers' cooperatives or associations at model sites.

At the completion of the preparation phase, the project evaluation teams, which are composed of BFAR, municipal LGUs and local financial institutions, will verify the achievements of the preparatory activities for formulation of proper extension models of mud crab culture. The following indicators should be monitored and evaluated to proceed onto the model program phases.

- Economic and technical feasibilities of improved techniques of mud crab grow-out culture.

- Preparation of proper financial schemes to support mud crab culture activities.
- Organization of farmers' cooperatives and associations at priority municipalities.

(3) Management Plan

1) Project Management Structure

The main project office will be placed at Cotabato City in order to communicate with the BFAR head office smoothly. A technical adviser and project assistants will work at the main office to operate and coordinate the project activities with BFAR.

BFAR will provide overall coordination of project activities. Specifically, Provincial Fisheries Officers (PFO) and Municipal Fisheries Coordinators (MFC) will mainly monitor activities on model sites in priority target provinces and priority municipalities. Municipal LGUs will also take responsibility for coordinating and monitoring local fish farmers at model sites in the priority municipalities.

Local financial institutions, such as government or commercial banks, will be expected to offer appropriate loan programs for small-scale business groups organized by local crab farmers, such as cooperatives or associations. In principle, the financial institutions will provide loans to fish farmers' cooperatives or associations and collect repayment from them. The farmers' cooperatives or associations will be expected to coordinate loans to and repayments from the mud-crab farmers.

BFAR will also take charge of evaluations of pilot projects and model programs, will conduct field studies with local consultants to collect important indicators and data on field activities, and will analyze them to arrive at final evaluation results.

The schematic diagram describing implementation structure of mud-crab culture promotion is shown in Figure 8-13.

Currently, BFAR has requested a budget from BFAR Central Office for constructing a mud-crab hatchery at a blackish-water area in the municipality of Parang, Maguindanao province. If the hatchery facility is completed in the near future, the hatchery capacity for mud-crab seed production should be increased by the project.

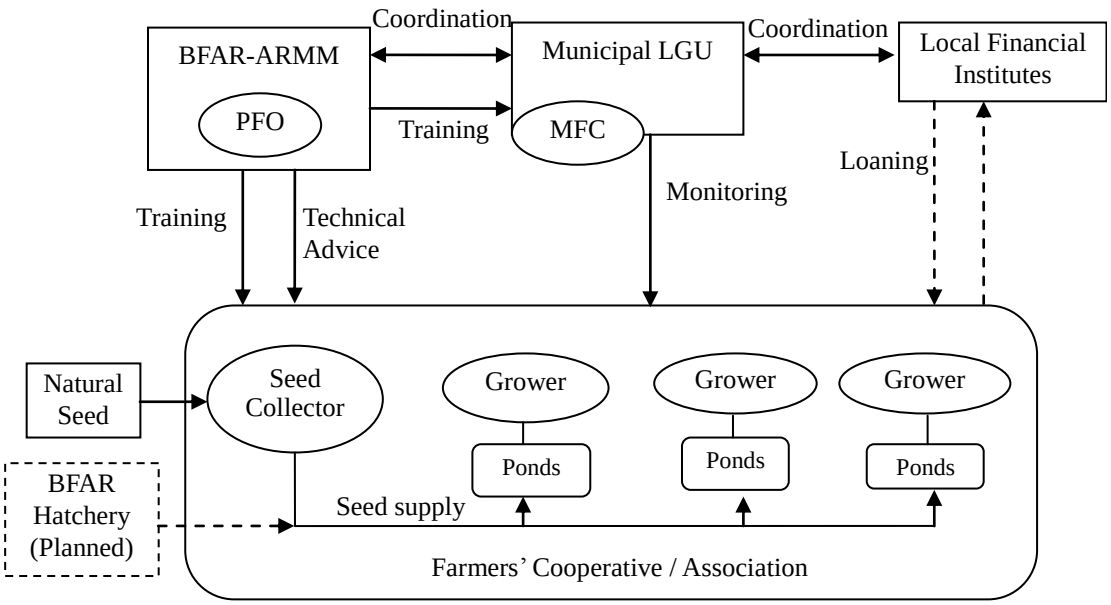


Figure 8-13: Implementation Structure of Mud-Crab Culture Promotion

2) Personnel Plan

The following local personnel will be needed in order to carry out all project activities (Table 8-111). To coordinate the overall programs smoothly and monitor technical and financial services properly, a local senior consultant will be posted as technical adviser to the project. He/She will supervise overall project activities in coordination with BFAR, municipal LGUs, and local financial institutions. Local project assistants will also be posted at the project offices to take charge of logistics and support to field activities.

In case a local mud-crab hatchery is prepared in the BFAR Central program, the project will support the hatchery operation by providing a technical specialist in mud-crab seed production.

Table 8-111: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Technical advisor	1	12 MM x 10 years	Filipino consultant (senior)
Project assistants in the project office	1	12 MM x 10 years	Filipino consultant
Project coordinator	1	12 MM x 10 years	BFAR-ARMM
Field officers (monitoring at provincial level)	3	1 MM x 10 years	Provincial Fisheries Officers (BFAR) at 3 target provinces
Field officers (monitoring at municipal level)	5-6	1 MM x 10 years	Municipal Fisheries Coordinators (MFC) or municipal LGU officers at priority municipalities
Financial program manager (management/monitoring at regional level)	2	2 MM x 4 years	Staff in charge of Small-Medium Enterprises (SME) in local financial institutions
Financial program coordinators (management/monitoring at provincial level)	3	1 MM x 10 years	Staff in charge of SME at provincial branches of local financial institutions
Cooperative development officers (helping organize farmers' cooperatives)	3	When required	Provincial CDA officers in target provinces
Training lecturers	10	When required	BFAR-ARMM, RFRDC-MBF (BFAR Region XI) or other institutions
Technical specialist for mud-crab seed production	1	When required	Filipino consultant (in case of completion of a mud-crab hatchery)

(4) Necessary Inputs

Facilities and equipment plans are shown in Tables 8-112 and 8-113.

1) Facility Plan

Table 8-112: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Main project office	Office space in Cotabato City	2-3 persons	
Aqua-silviculture demonstration project site (Parang, Maguindanao)	Earthen brackish-water ponds		Brackish-water ponds can be used for practical training programs

2) Equipment Plan

Table 8-113: Equipment Plan

Equipment	Quantity	Specification	Remarks
Office equipments	1	Copier, fax machine, desk, and chair	For the project office
Computer sets	4	Computer, printers, scanner, and etc.	1 set for project offices 3 sets for target provinces
Water quality devices	4	*p*H meter, DO meter, etc.	

(5) Plan of Operation

The project is to include the pilot project (3 years) and the model program (8 years) of mud-crab culture promotion. The model program will be composed of two subphases (each subphase taking five years), which will overlap in the middle of the project period. The first subphase will be carried in Maguindanao and Basilan provinces. In the second subphase, the model program will be carried out in Lanao del Sur province (Table 8-114).

Table 8-114: Plan of Operation

Activities	Agency	Year 1	2	3	4	5	6	7	8	9	10
Project operational phases		Preparation Phase					2nd Phase of Model Program				
				1st Phase of Model Program							
Selection of priority municipalities	BFAR LGU	■	■	■							
Pilot project of semi-intensive mud-crab culture	BFAR LGU		■	■	■	■	■				
Organization of farmers' cooperatives / associations	BFAR LGU			■	■	■	■	■	■		
Arrangement of loan programs for mud-crab culture	BFAR LGU LFI				■	■	■	■	■		
Training in mud-crab culture for LGU officers and farmers	BFAR					■	■	■	■		
On-site practical training for mud-crab farmers	BFAR						■	■	■		
Monitoring of mud-crab culture in model sites	BFAR LGU LFI					■	■	■	■	■	■
Evaluation of overall project	BFAR LGU						■	■	■	■	■

Note: BFAR: Bureau of Fisheries and Aquatic Resources;
LGU: Local Government Unit; LFI: Local Financial Institution

(6) Estimated Project Cost

Project costs estimated are shown in Tables 8-115 to 8-118.

1) Personnel Cost

Table 8-115: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Technical advisor	12 MM x 10 years	100,000/MM	12,000,000	Filipino consultant (senior)
Project assistant	12 MM x 10 years	50,000/MM	5,000,000	Filipino consultant
Total Cost			17,000,000	

2) Facility and Equipment Cost

Table 8-116: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office rental fee	12 months x 10 years	50,000	6,000,000	Project office in Cotabato City
Office equipment	1 set	200,000	200,000	1 set for project office
Computer sets	4 sets	150,000	600,000	1 set for project office
Water-quality devices	4 sets	150,000	600,000	3 sets for target provinces
Total Cost			7,400,000	

3) Operational Cost

Table 8-117: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field monitoring	10 days x 12 months x 2 persons x 10 years	2,500 /day/person	6,000,000	Including transportation costs, meals, and allowances
Training operation	15 days x 3 persons x 6 months x 4 years	2,500 /day/person	2,700,000	
Evaluation study for overall model programs	15 days x 3 persons x 2 municipalities x 4 times	2,500 /day/person	900,000	
Total Cost			9,600,000	

4) Training and Seminar Cost

Table 8-118: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remark
Training in mud-crab culture	10 trainees x 10 days x 4 times	1,500 /day/person	600,000	Including transportation costs, meals, and allowances
On-site practical training for mud-crab farmers	15 trainees x 3 days x 10 times	1,000/ day/person	450,000	
Total Cost			1,050,000	

(7) Collaboration with Other Projects

This project plan for mud-crab culture promotion should be coordinated with the proposed projects of financial assistance (action plan of finance) and capacity development for producers' organizations (action plan of capacity development) described in the later part of this report.

8-4-2-5 Seaweed

Project Title:
Development of Seaweed Farming and Processing to Improve the Living Standard of Coastal Communities in the ARMM

(1) Project Summary

1) Background

Eucheuma and related seaweeds are widely grown at coastal areas of the ARMM, especially in Tawi-Tawi and Sulu provinces. Carrageenan powder processed from dried seaweed is an important trading commodity to be exported as ingredients of processed food and cosmetic products. Therefore, carrageenan demand is swiftly expanding in the international market. However, in the ARMM, the quality of produced seaweed is not well maintained because of poor product quality control. For dried seaweed to sell at a higher price, its quality must be more stable and better than that of seaweed produced in other areas. The proposed projects will support improvement of the quality control of dried seaweed by the producer and will promote larger-scale local production by introducing adequate financial programs.

2) Target Areas

The main target areas for the overall projects are island provinces, Tawi-Tawi, Sulu, and Basilan. In those provinces, seaweed production is very popular in coastal communities. Maguindanao province also could produce seaweed, although the potential production area is limited. The pilot project to promote seaweed farming will be conducted at four or five selected priority municipalities in the island provinces of Tawi-Tawi, Sulu, and Basilan, and at one or two priority municipalities in Maguindanao (Table 8-119).

Table 8-119: Number of Target LGUs in the Project

Project	Target Areas
Model program	4-5 priority municipalities in Tawi-Tawi, Sulu, and Basilan 1-2 priority municipalities in Maguindanao

3) Target Group

The main target groups of the overall project are coastal communities engaged in seaweed farming. Municipal LGU officers in charge of local fisheries development will also benefit from the project by learning quality-control skills and concepts of seaweed farming and processing.

In each priority municipality, two or three fish farmers' organizations, such as cooperatives and associations, will also be selected to participate in the project.

4) Project Period

A total of ten years will be needed for the overall project implementation.

5) Project Purpose

Regional seaweed production (dried seaweed) in the ARMM will be increased by the financial and technical support of model programs.

6) Expected Outcome

Regional seaweed production in the ARMM will be increased by 30 % because of the financial and technical support at the completion of the project.

7) Expected Impact

The project is expected to increase the regional seaweed production by 30 %, especially in small island provinces. Because the annual seaweed production in the ARMM was about 600 million metric tons in 2009, it should reach 780 million metric tons at the completion of the project. Hence the project will make a future economic contribution to the ARMM of about Php 6 to 7 billion annually.

(2) Activities

To implement a suitable model for increasing seaweed production gradually, the same activities will be repeated in successive project phases. This proposed project plan is tentatively composed of three phases within ten years of implementation.

1) Selection of priority municipalities and model sites for seaweed culture promotion

Several municipalities will be selected as model sites in all ARMM provinces (except Lanao del Sur) in order to promote a stable business model of intensive seaweed culture. To select model municipalities that intend to promote seaweed culture positively, the project will ask municipal LGUs to present their ideas and planned programs for seaweed culture promotion as proposals, on the basis of which, model municipalities will be selected. Basically, four or five priority municipalities in each small-island province (Tawi-Tawi, Sulu, and Basilan) and one or two priority municipalities in Maguindanao will be selected as model sites.

2) Organization of local seaweed farmers as local business groups at model sites

In order for loan programs and technical services for promoting seaweed farming to be introduced, local seaweed farmers will need to join or form local business organizations, such as cooperatives or associations. Membership in a farmers' organization will be necessary for farmers to participate in the model programs for local seaweed production. If farmers' organizations already exist in the priority municipalities, the existing organizations will be strengthened to be adapted to the model programs. Local famers' organizations will be expected to take responsibility for loans to and repayments from local seaweed farmers and for coordinating with municipal LGUs and BFAR.

3) Arrangement of financial programs to support local seaweed production

Appropriate loan programs will be arranged with local financial institutions, such as governmental or commercial banks, in priority municipalities to prepare for and support seaweed culture operation. BFAR will coordinate with municipal LGUs and local financial institutions to introduce loan programs for seaweed culture. Those financial institutions will provide low-interest loans, but only to seaweed farmers' cooperatives or associations, not directly to individual farmers. Local seaweed farmers should form small farmers' groups, each composed of six or more farmers, within their cooperatives or associations, in order to share the financial responsibilities of loans and repayments as a group. Because most local farmers do not have sufficient financial resources to qualify for a loan program, a cooperative membership will be a necessary condition to obtain loans.

4) Rehabilitation of community -drying sites

Many farmers' groups have set up their own solar dryers for harvested seaweed at beaches and seashore areas. Bamboo sticks are suitable materials to build seaweed dryers, because they absorb moisture from wet seaweed and their cost is very low. However, bamboo-made solar dryers are not durable, and therefore must usually be rebuilt or rehabilitated every five years. If local seaweed farmers are managing solar dryers at community sites, municipal LGUs and farmer's cooperatives should consider rehabilitating the old dryers by means of loans or governmental financial support.

5) Training of quality control and production management of seaweed products

To produce a higher quality of dried seaweed, local seaweed farmers will need to understand quality control and proper handling skills for seaweed production and processing. BFAR will prepare intensive training programs in standard skills and quality control for seaweed production for municipal LGU officers and local farmer leaders. Moreover, on-site practical

training in proper production and processing skills will also be prepared for local seaweed farmers. To teach the actual standards for quality dried-seaweed, technical managers or staff personnel from local processing factories should be invited to the training programs as lecturers (Table 8-120).

The Fisheries Training Center of BFAR Region IX (Zamboanga) has experienced officers and the necessary facilities to train local fish farmers on seaweed culture. Hence, the Fisheries Training Center can be effectively used for training programs on seaweed culture, because BFAR does not have a specific training center and facility for seaweed culture. Mindanao State University Tawi-Tawi Campus (MSU Tawi-Tawi) and Zamboanga State Collage of Marine Science and Technology (ZSCMST) will also be academic resources institutions for the training programs on seaweed culture, because they provide technical services to local seaweed farmers.

Table 8-120: Contents of the Training Programs for Seaweed Culture Promotion

Training	Participants	Contents	Places
Training on basic seaweed culture and quality control	Municipal LGU officers, Municipal Fisheries Coordinators, Seaweed farmers' leaders	- Basic skills of seaweed culture - Quality control of seaweed products - Financial programs for small-scale farmers - Field trips to model farmers, etc.	Fisheries Training Center, BFAR Region IX (Zamboanga), MSU Tawi-Tawi, or ZSCMST
On-site practical training on seaweed culture and quality control	Local seaweed farmers	- Handling skills for seaweed drying. - Checkpoints of seaweed quality - Management of accounting and organizations, etc.	Leading seaweed farms in priority municipalities

6) Monitoring of field activities of local seaweed production[222]

After loan programs have been arranged and training programs have been implemented, local farmer groups that are participating in the model programs will start their operation of seaweed culture at their own sites. To maintain the operation of seaweed culture at model sites, municipal LGU officers in charge of fisheries programs and Municipal Fisheries Coordinators (MFC) will regularly visit the production sites and observe the seaweed culture operations. BFAR officers will also visit the model municipalities regularly to supply technical guidance to local farmers. In addition, BFAR officers will often monitor the repayments of loans to local financial institutions.

[222] For seaweed production, there are no preparation or evaluation activities because necessary techniques are already prepared at the beginning of the project.

7) Organization of a Quality Control Committee in each target province

To maintain the quality of dried seaweed properly, a quality-control committee for seaweed products will be established in each province. The committees will regularly monitor the production and drying process and check the quality of the dried seaweed. Given their regular inspections, the committee will be able to issue certificates to seaweed farmers' cooperatives or associations that will guarantee their product qualities to local distributers and processors.

The committee members will include not only governmental officers, but also private persons in the seaweed business, such as producers, distributers, and processers. A tentative sketch of the composition of a quality-control committee is indicated in Table 8-121.

Table 8-121: Possible Composition of a Quality Control Committee

Government side	Private sector side
- Representative of BFAR-ARMM - Provincial Fisheries Officers - Municipal Fisheries Coordinators in priority municipalities - Municipal LGU officers in charge of fisheries programs in priority municipalities	- Representative of the Chamber of Commerce - Technicians at seaweed-processing factories - Representatives of seaweed traders - Representatives of seaweed farmers' cooperatives or associations

8) Strengthening seaweed laboratory operations

BFAR has established a new tissue-culture laboratory for local seaweed seedlings in the head office at Cotabato City. The laboratory will maintain some pure strains of local seaweed species, and supply them to seaweed production areas if cultured seaweed strains need to be changed or renewed. The project will support the laboratory operation in order to keep good- quality seaweed strains available.

(3) Management Plan

1) Project Management Structure

The main project office will be placed at Cotabato City in order to communicate with the BFAR head office smoothly. A technical adviser and project assistants will usually work at the main office to operate and coordinate the project activities with BFAR. Additionally, a liaison project office will be placed in Zamboanga City to coordinate the model programs in the island provinces of Basilan, Sulu, and Tawi-Tawi. BFAR will provide overall coordination of project activities. Specifically, Provincial Fisheries Officers (PFO) and Municipal Fisheries Coordinators (MFC) will mainly monitor activities on model sites in their target provinces and priority municipalities. In priority municipalities, Municipal LGUs will also take responsibility for coordinating and monitoring the seaweed culture and drying processing of local farmers at

model sites.

Local financial institutions, such as governmental or commercial banks, will prepare and offer appropriate loan programs for seaweed producers' organizations, such as farmers' cooperatives or associations. Basically, the financial institutions will provide loans to farmers' organizations and collect repayment from them. The farmers' organizations will be expected to coordinate loans to and repayments from seaweed farmers' groups.

Schematic diagram of implementation structure for seaweed culture promotion are shown in Figure 8-14.

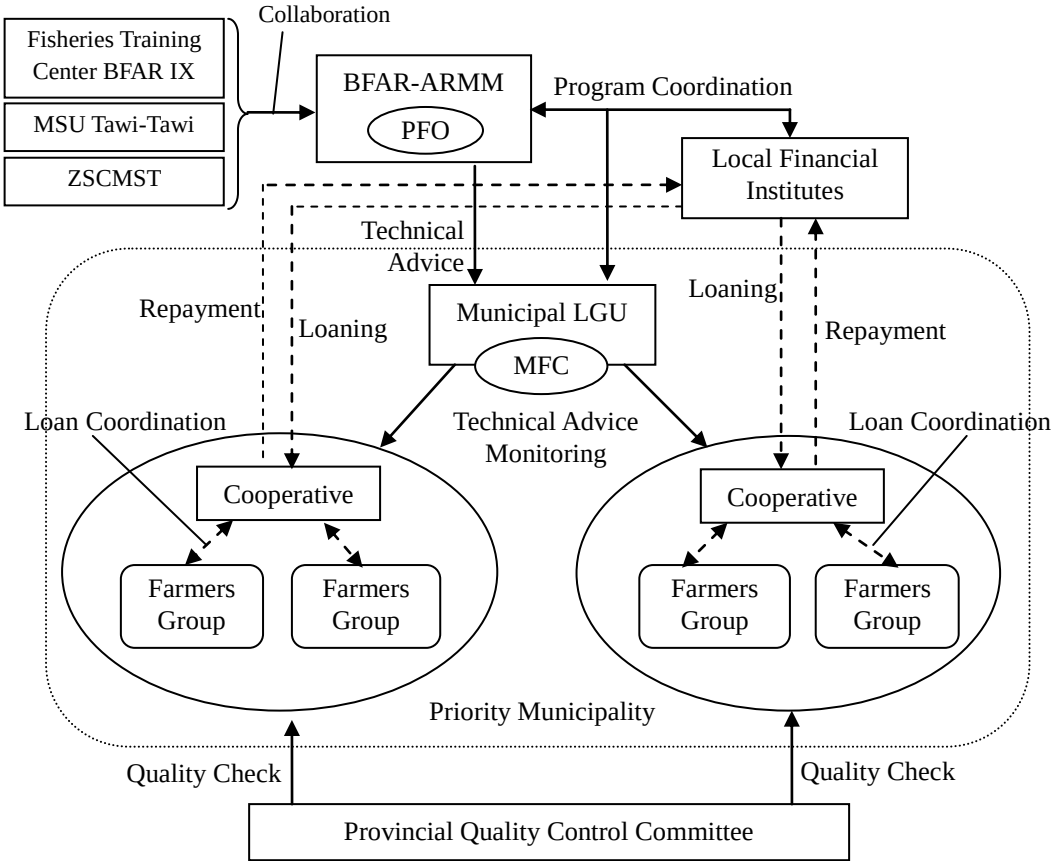


Figure 8-14: Implementation Structure for Seaweed Culture Promotion in the ARMM

Note: PFO: Provincial Fisheries Officer; MFC: Municipal Fisheries Coordinator

MSU Tawi-Tawi: Mindanao State University Tawi-Tawi Campus

ZSCMST: Zamboanga State College of Marine Science and Technology

2) Personnel Plan

The following local personnel will be needed to carry out all the project activities. To coordinate the overall programs smoothly and monitor technical and financial services properly, a local senior consultant will be posted as technical adviser in the project. He will supervise overall project activities in coordination with BFAR, municipal LGUs, and local financial institutions. Local assistants will also be posted at the main and liaison offices to take charge of logistics and support to field activities (Table 8-122).

Table 8-122: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Technical advisor	1	12 MM x 10 years	Filipino consultant (senior)
Project assistant in main office	1	12MM x 10 years	Filipino consultant
Project assistants in liaison office	2	12MM x 10 years	Filipino consultant
Project coordinator	1	12MM x 10 years	BFAR-ARMM
Field officers for monitoring at provincial level	5	1MM x 10 years	Provincial Fisheries Officers (BFAR) in target provinces
Field officers for monitoring at municipality level	10-15	1 MM x 10 years	Municipal Fisheries Coordinators (BFAR) and Municipal LGU officers in priority municipalities
Financial program managers (management/monitoring at regional level)	2	2 MM x 4 years	Staff in charge of SME in local financial institutions
Financial program coordinators (management/monitoring at provincial level)	4	1MM x 10 years	Staff in charge of SME at provincial branches of local financial institutions
Quality-control advisor	1	When required	Technician at local seaweed-processing factory
Officers of development cooperative for supporting farmers' cooperatives	5	When required	Provincial CDA Offices
Training lectures	10	When required	BFAR-ARMM, Fisheries Training Center BFAR IX (Zamboanga), MSU Tawi-Tawi, ZSCMST

(4) Necessary Inputs

Necessary facilities and equipment are shown in Tables 8-123 and 8-124.

1) Facility Plan

Table 8-123: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Main office at Cotabato City (rental)	4-5 persons		For coordination of overall programs with BFAR-ARMM
Liaison office at Zamboanga City (rental)	2-3 persons		For coordination of field programs in island provinces
Seaweed tissue-culture laboratory	Equipped with tissue-culture facilities		A laboratory already exists at the BFAR-ARMM head office
Seaweed solar dryers	Made of bamboo sticks	10 m x 10 m	Rehabilitating old public solar dryers if necessary

2) Equipment Plan

Table 8-124: Equipment Plan

Equipment	Quantity	Specification	Remarks
Office equipment	2	copier, fax machine, desk, and chair	For main and liaison project offices
Computer sets	6	computer, printers, and scanners	2 sets for project offices 4 sets for target provinces
Water-quality devices	6	*p*H meter, Do meter, etc.	

(5) Plan of Operation

The model program will consist of three phases (each phase taking four years), which will overlap in the middle of the project period (Table 8-125).

Table 8-125: Plan of Operation

Activities	Agency	Year									
		1	2	3	4	5	6	7	8	9	10
Operational phases of the Project		1st Phase of Model Program						3rd Phase of Model Program			
					2nd Phase of Model Program						
Selection of model municipalities	BFAR	■	■				■	■			
Organization/strengthening of farmers' cooperatives	BFAR, LGU		■	■			■	■	■		
Arrangement of loan programs for seaweed production	BFAR, LGU, LFI			■	■		■	■	■	■	
Rehabilitation of seaweed drying places	BFAR, LGU			■	■		■	■	■	■	
Training programs for LGU officers	BFAR				■			■		■	
On-site training for seaweed farmers	BFAR					■			■		
Monitoring of seaweed operations in model sites	BFAR, LGU, LFI			■	■	■	■	■	■	■	■
Establishment of Quality-Control Committee	BFAR	■	■								
Regular quality check of dried seaweed	BFAR, QCC			■	■	■	■	■	■	■	■

Note: BFAR: Bureau of Fisheries and Aquatic Resources

LGU: Local Government Unit; LFI: Local Financial Institutions

QCC: Quality Control Committee

(6) Estimated Project Cost

Necessary costs estimated are shown in Tables 8-126 to 8-129.

1) Personnel Cost

Table 8-126: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Technical advisor	12 MM x 10 years	100,000/MM	12,000,000	Filipino consultant (senior)
Project assistants	12 MM x 10 years x 3 persons	50,000/MM	18,000,000	Filipino consultant
Total Cost			30,000,000	

2) Facility and Equipment Cost

Table 8-127: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office rental fee	2 offices x 12 month x 10 years	50,000	12,000,000	Main office at Cotabato City, Liaison office at Zamboanga
Office equipment	2 sets	200,000	400,000	For project offices
Computer sets	6 sets	150,000	900,000	2 sets for project offices, 4 sets for target provinces
Water-quality devices	6 sets	150,000	900,000	
Total Cost			14,200,000	

3) Operational Cost

Table 8-128: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field monitoring	10 days x 12 MM x 2 persons x 10 years	2,500/day/person	6,000,000	Including transportation costs, meals, and allowances
Training operation	15 days x 3 persons x 6 months x 4 years	2,500/day/person	2,700,000	
Total Cost			8,700,000	

4) Training and Seminar Cost

Table 8-129: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Training for seaweed culture and quality control	15 participants x 10 days x 2 times x 3 years	1,500 /day/person	1,350,000	Including transportation costs, meals, and allowances
On-site practical trainings for seaweed culture	20 participants x 2 days x 20 times x 3 years	1,000 /day/person	1,600,000	
Total Cost			2,950,000	

(7) Collaboration with Other Projects

This action plan for seaweed culture promotion will be coordinated with the proposed action plans for financial assistance (action plan of finance) and capacity development for producers' groups (action plan of capacity development) described in the later part of this report.

The national BFAR will also conduct various activities of the original seaweed program to promote national seaweed production. Some activities suggested in the action plan can coordinate with the BFAR programs at the field level.

Moreover, the LBP currently operates a model program of value-chain finance to support local seaweed farmers at Panglima Sugala, Tawi-Tawi province. Under the financial program, local seaweed farmers form a liaison organization, Panglima Sugala Seaweed Farmers Federation, to manage and promote local seaweed production and marketing at the municipal level. The framework and experiences of that financial program can be applied to region-wide promotion activities for seaweed culture production in the action plan.

In addition, USAID also conducts some seaweed promotion activities intended to improve fishers' livelihoods in the GEM program (Growth with Equity in Mindanao). The action plan can coordinate with those field activities on seaweed culture.

8-4-2-6 Tilapia

Project Title:
Development of Tilapia Culture to Improve the Living Standard of Coastal Communities in the ARMM

(1) Project Summary

1) Background

Tilapia is widely cultured and consumed in the Philippines. In the ARMM, Lake Buluan is one of the places where tilapias flourish in fish pens. Even though there are large watershed or lake areas in mainland provinces, in Maguindanao, and Lanao del Sur, those areas have not been developed for freshwater fish culture, especially tilapia.

The current tilapia production does not meet the demand of the local market. Thus high demand for tilapia is to be expected in local markets of the ARMM. In addition, the future potential for fresh tilapia and tilapia products is expected to increase as the population grows in the region.

The proposed project intends to promote tilapia seed production and grow-out pond culture in potential watershed and basin areas in the ARMM. It is expected to increase the local supply of tilapia seeds and tilapia production for the local market.

2) Target Areas

The main target areas for the proposed project are mainland provinces, Maguindanao, and Lanao del Sur. Areas with great potential for tilapia culture in the ARMM are Liguasan Marsh and the basin of Lake Lanao. Lake Buluan may not be included in the target areas, because tilapia pen culture has been largely developed, and fish pens are too crowded in the lake.

For the first three years, pilot projects on tilapia culture will be conducted at only two or three model sites in the target provinces. After the pilot projects, four to six priority municipalities will be selected in each target province to conduct model programs for promotion of tilapia culture and processing (Table 8-130).

Table 8-130: Number of Target LGUs in the Project

Main Programs	Target Areas
Pilot project (3 years)	2-3 model sites (barangay) in Maguindanao and Lanao del Sur
Model program (8 years)	4-6 priority municipalities in each province (Maguindanao and Lanao del Sur)

3) Target Group

The main target group of the proposed project is local farmers who are interested in or engaged in tilapia culture. The farmers who participate in the project will have to prepare fish ponds on their own land and form cooperative associations in order to receive financial and technical services. LGU officers in charge of fisheries development will be also able to benefit from the project by learning basic skills of tilapia culture and processing. Basically, in each priority municipality, two or three farmers' organizations, such as cooperatives, associations, or business groups, will also be selected to participate in the pilot project.

4) Project Period

A total of ten years will be necessary for the overall project.

5) Project Purpose

Local production of tilapia culture will be increased by improvement of the seed supply and culture methods.

6) Expected Outcome

- The productivity of tilapia pond culture will be increased by 30 to 40 % by introduction of semi-intensive culture methods in the priority municipalities.
- Total area of fish ponds for tilapia culture will be increased by 50 % in the priority municipalities.

7) Expected Impact

Annual production of tilapia in the ARMM was about 4,000 metric tons in 2009. However, 90 % of the tilapia was produced by fish-pen culture at Lake Buluan. Only about 400 metric tons of tilapia was produced at fish ponds. Since the project is expected to double the tilapia pond-culture production, annual pond production in the ARMM should become about 800 metric tons. Therefore, the annual production value of tilapia pond culture may reach Php 80 to 100 million per year in the ARMM.

(2) Activities

1) Selection of priority municipalities for tilapia culture promotion

Several municipalities will be selected as priority areas in target provinces (Maguindanao and Lanao del Sur) to establish a stable business model for intensive tilapia culture. To select proper priority municipalities, ones that intend to promote tilapia culture positively, the project will ask municipal LGUs to submit proposals presenting their ideas and plans for tilapia culture promotion. After selecting the candidate municipalities, field surveys will be conducted in the candidate areas by a team of local consultants and BFAR officers. The survey will need to confirm that the geological and social conditions are suitable for tilapia culture. Given the results of the surveys, about four to six priority municipalities in each target province (Maguindanao and Lanao del Sur) will be selected.

2) Pilot projects on tilapia seed production and grow-out culture

Small-scale pilot projects will be conducted at two or three model sites in the target provinces to verify the productivity and profitability of tilapia seed production and grow-out culture, and to identify issues and problems with the tilapia culture business. In introducing seed production and grow-out pond culture, the minimizing of feed cost is the most important issue for fish farmers. In the pilot project, fermented rice bran will be introduced as the locally made feed for tilapia pond culture. Then its feed efficiency will also be verified as a project result.

Fish farmers who participate in the pilot project will need to take responsibility for recording field data on their fish culture operation. In some target sites, microfinance programs will also be combined with technical activities in pilot projects, in order to evaluate their actual effects on the financial management of local tilapia famers. Given the collected field data, BFAR will evaluate the productivity and profitability of pond culture operation. Any issues and problems occurring during the pilot project will be useful information for improving the future technical and business operations of local tilapia culture. Municipal LGUs will take responsibility for coordinating and monitoring the field operation of pilot fish ponds.

Given the results of the pilot projects, the components of the model programs will be revised and modified to be more practical for farmers to operate at actual fields.

3) Improvement of seed production at public freshwater fish farms

To promote tilapia culture for local farmers, the supply of tilapia seeds must be stable and sufficient. Currently, local fish farmers mainly obtain tilapia seeds from two public freshwater

fish farms operated by BFAR. The BFAR fish farms will be placed at Datu Odin Sinsuat of Maguindanao (in the campus of Mindanao State University Maguindanao) and Marantao of Lanao del Sur to supply tilapia brood stock and fingerlings, mainly to local farmers. The project is intended to improve seed production and tilapia seed supply to local fish farmers.

Marantao Fish Farm may need to be rehabilitated, because its facilities, such as fish ponds and hatchery, seem to be antiquated. The project should dispatch local consultants to evaluate the need for facility rehabilitation of the fish farm. If necessary, the consultants draft a plan for fish farm rehabilitation. Given the rehabilitation plan, BFAR will attempt to obtain the construction costs from the government budget and donor assistance.

Moreover, the BFAR fish farms usually supply tilapia seeds with a mixture of male and female. Such a mixture decreases the productivity of tilapia pond culture, because cultured fish often expend much energy in their mating and spawning because of the encounters between male and female in the same pond, as with the case of tilapia. The BFAR fish farms should try to produce mono-sexual tilapia fingerlings (all male seeds) by simple hormone treatments at early development stages.

However, the tilapia seed supply from the BFAR fish farms will still be limited, in spite of rehabilitation of the farm facilities and improvement of their seed production operation. Therefore, in the second phase of the project, BFAR should try to establish private tilapia-seed producers at model sites in the priority municipalities. The trained private seed producers will be expected to start tilapia seed production in their local areas to make up for the current shortage of tilapia seed.

4) Organization of local fish farmers as local business groups

In order to introduce loan programs and technical services for tilapia culture, the project will encourage local tilapia farmers to form local business groups, such as cooperatives or associations. Ideally, a local cooperative or association will include all local stakeholders engaged in tilapia culture in each barangay or area, such as seed producers, grow-out farmers, and fish processors.

If fish farmers' cooperatives or associations already exist in priority municipalities, those existing fish farmers' organizations will be used and strengthened for introducing loan programs and technical services for tilapia culture. Those farmers' cooperatives or associations will be expected to take responsibility for loans to and repayments by local farmers and for

coordinating with municipal LGUs and BFAR.

5) Arrangement of financial programs to support local tilapia production

Appropriate loan programs with local financial institutions, such as governmental or commercial banks, will be introduced to priority municipalities in order to support tilapia farmers' operations. BFAR will coordinate with municipal LGUs and local financial institutions to introduce reasonable loan programs for fish culture as small-medium enterprises.

Local financial institutions will be expected to provide loan programs with reasonable interest rates, but only to fish farmers' cooperatives or associations, not directly to individual farmers. Their leaders will need to coordinate loans to and repayments by their member farmers with municipal LGUs. Because most local farmers do not have sufficient financial resources to qualify for loans, their membership in cooperatives or associations will be a necessary condition for them to obtain loans.

6) Training on tilapia culture and seed production

To promote the basic ideas and skills of tilapia seed production and grow-out pond culture, intensive training programs will be prepared and conducted for municipal LGU officers and fish farmer leaders in priority municipalities. The intensive training programs will cover not only technical matters, but also management skills, especially record keeping and accounting for a fish culture business. For tilapia culture promotion, it will be very important to establish and train private seed producers properly to reinforce local tilapia seed production and supply.

The Mindanao Freshwater Fisheries Technology Center (MFFTC) at Kabacan, Cotabato Province, which belongs to the national BFAR, regularly produces and supplies tilapia brood stock and seeds to local farmers in Mindanao. The center's facilities and officers can be used for the training programs in the project. In addition, Mindanao State University (MSU) Maguindanao and Marawi Campuses can collaborate on the implementation of training programs on tilapia culture. Specifically, the campus facilities and BFAR fish farms of MSU Maguindanao can be effectively used as a training site (Table 8-131).

On-site practical training will also be conducted to train local fish farmers in proper skills for tilapia seed production and grow-out culture at actual fish ponds. In addition, training programs in tilapia processing for value-added production will also be conducted for LGU officers and women's groups of the fish farmers' cooperatives or associations. Researchers working on freshwater fish culture at MSU Maguindanao and Marawi may be engaged in the on-site

practical training together with BFAR and project consultants.

Table 8-131: Contents of Training Programs for Tilapia Culture Promotion

Training	Participants	Contents	Places
Training on tilapia grow-out culture	Municipal LGU officers, Local farmers at model sites	- Basic skills of semi-intensive culture - Making and feeding fermented rice bran - Field trips to pond culture, etc.	MFFTC (BFAR National) or MSU Maguindanao
Training in tilapia seed production	Municipal LGU officers, Local farmer leaders at model sites	- Management of tilapia brood stock - Preparation of spawning ponds - Intermediate culture of fish seeds - Handling of tilapia seeds, etc.	MFFTC (BFAR National) or MSU Maguindanao
On-site practical training on tilapia culture	Local farmers at model sites	- Demonstration of fish-pond preparation - Making and feeding fermented rice bran - Practical record keeping, etc.	Leading fish farms at model sites in priority municipalities
Training in tilapia processing	Municipal LGU officers, Women leaders at model sites	- Processing of boneless fish - Processing of smoked fish, etc.	MFFTC (BFAR National) or MSU Maguindanao / Marawi

7) Monitoring and evaluation of field activities of tilapia culture

After the loan programs have been arranged and the training programs have been implemented, local farmers will start their operation of seed production and grow-out pond culture. To maintain the operation of tilapia culture at model sites, municipal LGU officers in charge of local fisheries development will regularly visit the fish ponds, and observe the tilapia culture operations. BFAR officers will also visit the priority municipalities regularly to supply technical advices to local farmers and to monitor repayments of loans through their business bodies.

Moreover, to evaluate the overall progress and achievement of the model programs, BFAR officers will conduct evaluation studies with local consultants about every two years. Given the evaluation results, the components and activities of the second phase for tilapia culture promotion will be revised and modified to be more practical for farmers' organizations at model sites.

At the completion of the preparation phase, the project evaluation teams, which are composed of BFAR, municipal LGUs and local financial institutions, will verify the achievements of the

preparatory activities for formulation of proper extension models of tilapia culture. The following indicators should be monitored and evaluated to proceed to the model program phases.

- Improvement of the capacity of tilapia seed production at local hatcheries.
- Economic and technical feasibilities of applied techniques of tilapia seed production and grow-out culture.
- Preparation of proper financial schemes to support tilapia culture activities.
- Organization of farmers' cooperatives and associations at priority municipalities.

8) Promotion of cultured tilapia processing by women's groups

For value-added tilapia products, the project will promote local processing of cultured tilapia fish. Farmers' women's groups of target cooperatives or associations will be specially organized to produce processed tilapia, such as dried and smoked fish. Processed fish products will be locally distributed and consumed by local people in the ARMM. Members of women's processing groups will have opportunities to participate in the training programs on fish processing prepared by the project.

(3) Management Plan

1) Project Management Structure

The main project office will be placed at Cotabato City in order to communicate with the BFAR head office smoothly. A technical adviser and project assistants will be engaged in the project work at the main office to supervise and coordinate the project activities, which cover Maguindanao and Lanao del Sur provinces.

BFAR will provide overall coordination of project activities. Specifically, Provincial Fisheries Officers (PFO) will mainly monitor activities on model sites in the priority provinces. Municipal LGUs will also take responsibility for coordinating and monitoring local fish farmers at model sites.

Local financial institutions, such as government and commercial banks, will prepare and offer appropriate loan programs for small business groups, such as cooperatives or associations of local fish farmers. Basically, the financial institutions will provide loans to fish farmers' cooperatives or associations, and collect repayment from them. The farmers' cooperatives or associations will be expected to coordinate loans to and repayments from tilapia farmers' groups.

BFAR will also take charge of evaluating pilot projects, will conduct field studies with local consultants to collect important indicators and data on field activities, and will analyze them to arrive at a final evaluation.

Schematic diagram of implementation structure for tilapia culture promotion is shown in Figure 8-15.

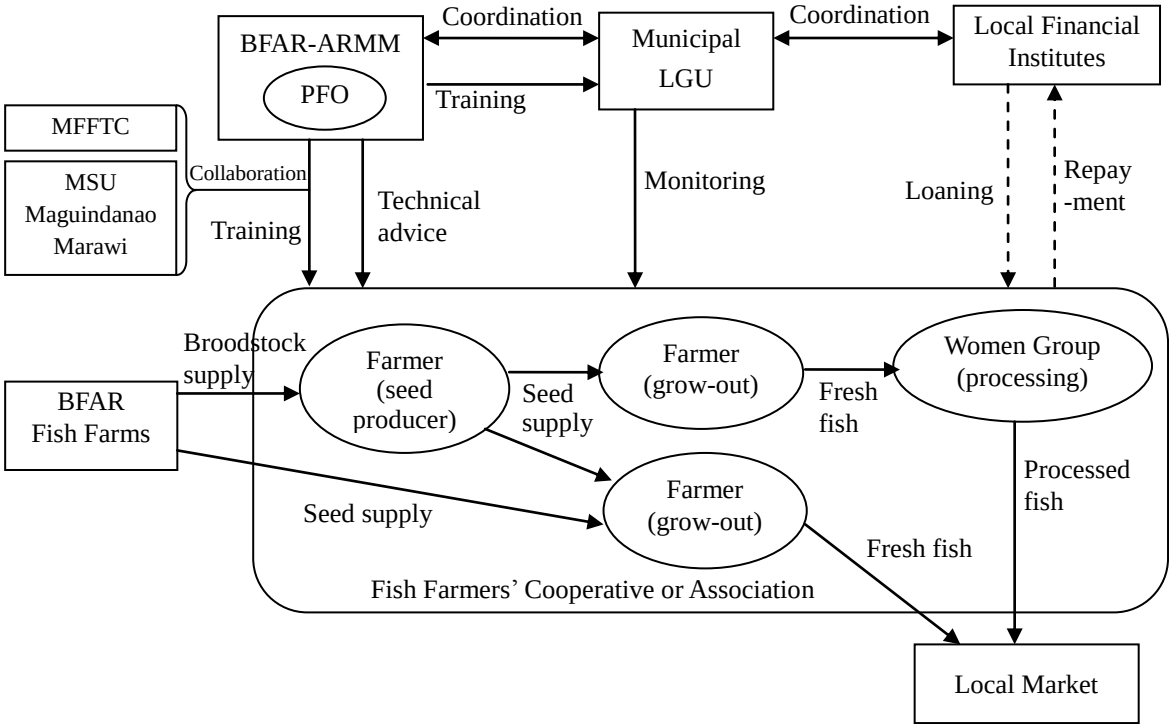


Figure 8-15: Implementation Structure for Tilapia Culture Promotion

2) Personnel Plan

The following local personnel will be necessary to carry out all project activities (Table 8-132). To coordinate the overall programs smoothly and monitor technical and financial services properly, a local senior consultant will be posted as a technical adviser on the project. He will supervise overall project activities in coordination with BFAR, municipal LGUs, and local financial institutions. Local project assistants will also be posted at the project offices to take charge of logistics and support to field activities.

Table 8-132: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Technical advisor	1	12 MM x 10 years	Filipino consultant (senior)
Project assistants	2	12 MM x 10 years	Filipino consultant
Project coordinator	1	12 MM x 10 years	BFAR-ARMM
Field officers for monitoring (at provincial level)	2	1 MM x 10 years	Provincial Fisheries Officers (BFAR) in target provinces
Field officers for monitoring (at municipal level)	10-12	1 MM x 10 years	Municipal LGU officers at priority municipalities
Financial program manager (management/monitoring at regional level)	1	2 MM x 4 years	Staff in charge of Small-Medium Enterprises (SME) in local financial institutions
Financial program coordinators (management/monitoring at provincial level)	2	1 MM x 10 years	Staff in charge of SME at provincial branches of local financial institutions
Fish processing advisors	2	When required	Persons in existing tilapia processing groups
Cooperative development officers (for supporting fish farmer cooperatives)	2	When required	Provincial CDA officers in target provinces
Training lecturers	10	When required	BFAR-ARMM, MFFTC (BFAR National), and MSU Maguindanao / Marawi

(4) Necessary Inputs

Necessary facilities and equipment are shown in Tables 8-133 and 8-134.

1) Facility Plan

Table8-133: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Main office space	Office space in Cotabato City	4-5 persons	
Fish ponds	Earthen fish ponds (500 to 1,000 m^2 x 4)	1.0 ha	Local farmers' ponds for pilot projects
BFAR Marantao Fish Farm	Earthen fish ponds Hatchery facility	3.5 ha	If necessary, a facility rehabilitation plan will be prepared.
BFAR Datu Odin Sinsuat Fish Farm (at MSU Maguindanao Campus)	Earthen fish ponds Hatchery facility	1.0 ha	Review current operation of tilapia seed production

2) Equipment Plan

Table 8-134: Equipment Plan

Equipment	Quantity	Specification	Remarks
Office equipments	1	copier, fax machine, desk, chairs, etc.	For a project office
Computer sets	3	computer, printers, and scanner	1 set for main project office 2 sets for target provinces
Water-quality devices	3	*p*H meter, DO meter, etc.	

(5) Plan of Operation

The project during the first three years will include a pilot project and rehabilitation work on BFAR fish farms, and for the next seven years it will consist of the model programs of tilapia culture promotion. The model programs include two subphases (each subphase takes five years). In each phase, two or three priority municipalities will be targeted for the second phase in their target provinces (Maguindanao and Lanao del Sur) (Table 8-135).

Table 8-135: Plan of Operation

Activities	Agency	Year									
		1	2	3	4	5	6	7	8	9	10
Operational Phase of the Project		Preparation Phase					2nd Phase of Model Program				
				1st Phase of Model Program							
Selection of priority municipalities	BFAR										
Pilot project of seed production / grow-out culture at ponds	BFAR LGU										
Rehabilitation of BFAR fish farms	BFAR										
Organization of farmers' cooperatives / associations	BFAR LGU										
Arrangement of loan programs for fish farmers	BFAR LGU LFI										
Training of tilapia seed production and grow-out culture	BFAR										
On-site practical training for tilapia farmers	BFAR										
Training in tilapia processing	BFAR										
Monitoring of tilapia farming at model sites	BFAR LGU LFI										
Evaluation of overall project	BFAR LGU										

Note: BFAR: Bureau of Fisheries and Aquatic Resources

LGU: Local Government Unit; LFI: Local Financial Institute

(6) Estimated Project Cost

Necessary costs estimated are shown in Tables 8-136 to 8-139.

1) Personnel Cost

Table 8-136: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remark
Technical advisor	12 MM x 10 years	100,000 /MM	12,000,000	Filipino consultant (senior)
Project assistants	12 MM x 10 years x 2 persons	50,000 /MM	12,000,000	Filipino consultant
Total Cost			24,000,000	

2) Facility and Equipment Cost

Table 8-137: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Rehabilitation of Marantao Fish Farm	Fish pond 2 ha hatchery facility	To be determined	To be determined	If necessary to rehabilitate the facilities
Office rental fee	12 months x 10 years	50,000	6,000,000	For project office in Cotabato City
Office equipment	1 set	200,000	200,000	
Computer sets	3 sets	150,000	450,000	1 set for project office 2 sets for target provinces
Water-quality devices	3 sets	150,000	450,000	
Total Cost			7,100,000	

3) Operational Cost

Table 8-138: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field monitoring	10 days x 12 months x 2 people x 10 years	2,500 /day/person	6,000,000	Including transportation costs, meals, and allowances
Training operation	15 days x 3 people x 12 months x 2 years	2,500 /day/person	2,700,000	
Evaluation study for overall project	15 days x 3 people x 2 municipalities x 4 times	2,500 /day/person	900,000	
Total Cost			9,600,000	

4) Training and Seminar Cost

Table 8-139: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Training on tilapia grow-out culture	10 trainees x 10 days x 8 times	1,500/day/person	1,200,000	Including transportation costs, meals, and allowances
Training on tilapia seed production	10 trainees x 10 days x 8 times	1,500/day/person	1,200,000	
On-site practical training for tilapia farmers	20 trainees x 3 days x 20 times	1,000/day/person	1,200,000	
Training in tilapia processing	10 trainees x 10 days x 4 times	1,500/day/person	600,000	
Total Cost			4,200,000	

(7) Collaboration with Other Projects

The project plan for tilapia culture promotion should be coordinated with the proposed projects of financial assistance (action plan of finance) and capacity development of local producer groups (action plan of capacity development) described in the later part of this report.

8-4-3 **Livestock**

8-4-3-1 Cattle and Goat

Project Title:
Technical Improvement of Cattle and Goat Raising in the ARMM

(1) Project Summary

1) Background

Technical improvement of cattle raising will increase the number of cattle in the area. However, it is difficult for small-scale cattle farms to access up-to-date information about topics such as ecology and the physiology of cattle, which is indispensable for efficient cattle–raising management.

The situation is similar to goat raising. Goat is not only a source of protein for Filipinos; it also provides much-needed income. As goat production requires low initial investment and involves smaller risks compared to other livestock species, it is an attractive undertaking among resource-poor households. At the moment, there is an increase in demand for goats. However, it is difficult for small-scale goat farms to access up-to-date information about topics such as ecology and goat physiology, which is also indispensable for efficient goat-raising management.

Due to the above challenges, the productivity of cattle and goat raising is not high in the region. Moreover, even for goats, few farmers have taken on breeding as part of their farming. Therefore, introduction of proper method of cattle and goat raising suitable for each farm's conditions will significantly improve the productivity of cattle and goat and stabilization of farm management in the ARMM. It is expected that sharing information about efficient goat-raising procedures and goat-breeding technologies within a community will increase the number of goat farms. In addition, the process of a small cattle or goat farmer dealing with a broker is not efficient. While small cattle or goat farmers have insufficient knowledge concerning cattle or goat price, the price offered by brokers often does not accurately reflect market price. On the other hand, from the broker's point of view, even when he needs two or more cattle or goat at once, it is difficult to secure them in dealing with small farmers. Therefore, the brokers have to negotiate with other small farmers separately and this is not efficient. When the small cattle or goat raisers in a barangay mutually exchange information about cattle or goat production, it

leads to an improvement of this situation by providing cattle or goat shipments on a common schedule.

2) Target Areas

Target areas are existing cattle and goat–raising areas in five provinces. Maguindanao province will be the target province in the first phase (demonstration phase), and the other four provinces will be targeted in the second phase (implementation phase) based on the result of the previous phase (Table 8-140).

Table 8-140: Number of Target LGUs in the Project

Project	Target Areas
First phase (3 years)	3 model sites (barangay) in Maguindanao
Second phase (7 years)	1-2 priority municipalities in each target province (Maguindanao, Lanao del Sur, Sulu, Tawi-Tawi, and Basilan)

3) Target Group

The target group is small-scale farmers who are raising cattle and goat. The minimum farm size will be one to three heads of cattle and five female goats and one male goat. The desirable conditions of farmers are as follows.

- Farmer who actually raises cattle or goat by himself/herself (absent owner/caretaker is not acceptable).
- Easy access to the group sites for training, field survey, and monitoring.
- Must agree to attend all the training sessions and follow-through activities.
- Must own his/her own land for cattle or goat raising (need minimum land space for cattle or goat house and pastureland)
- Must agree to attend all the training sessions and follow-through activities.
- Must own his/her own land for cattle raising (need minimum land space for cattle house and pastureland).

4) Project Period

The project is divided into two phases. The period of the first phase (demonstration phase) is three years and the second phase (implementation phase) is seven years.

5) Project Purpose

Productivity and quality of cattle and goat are improved by the introduction of appropriate raising techniques.

6) Expected Outcome

Cattle

- 50% of cattle raising farmers who are technically supported by the project in the pilot phase can increase their number of cattle.
- Among the farmers of the second phase, 10% experience their first trial in cattle raising.

Goat

- 70% of goat-raising farmers who are technically supported by the project in the pilot phase can increase their number of goats.
- Among the farmers of the second phase, 20% experience their first trial in goat raising.

7) Expected Impact

Cattle

If a beef cattle farmer has one female cow at the beginning of training, at least one calf can be produced with proper management within three years. That is to say, after the calf grows to 200 kg, it will be sold for about Php 20,000, farm-gate price.

Goat

If a goat-raising farmer has one male goat and nine female goats at the beginning of training, with proper management that farmer can produce and sell at least 19 kids within three years. That is to say, if the unit price per kid is Php 3,000, the farmer can earn a total gross income of Php 57,000.

(2) Activities

1) Selection of priority municipalities and model sites for cattle and goat-raising promotion.

DAF is the organization responsible for managing the project. In collaboration with the Department of Agrarian Reform and USM, they will select LGUs, target groups, and core farmers, and conduct a baseline survey as preparation.

Several priority municipalities will be selected in the target provinces, Maguindanao, Lanao del Sur, Sulu, Tawi-Tawi, and Basilan, in order to promote cattle or goat raising as a sort of local business model. To select priority municipalities that intend and are able to promote cattle or goat raising, the project will request municipal LGUs to submit proposals presenting their ideas and plans for promotion. After selecting candidates for priority municipalities, a team of DAF officers, USM representatives, and local consultants will conduct field surveys at candidate areas. According to the results of the surveys, priority municipalities for raising will be determined.

2) Pilot project

First, small-scale pilot projects will be conducted at three proper sites (barangay level) to verify the productivity and profitability of cattle or goat. Moreover, they will identify important issues and problems related to the operation and business of cattle or goat production. The pilot projects will be prepared and carried out at selected sites in Maguindanao province because it is located at a shorter distance from ARMMIARC and USM than the other provinces. The farmers who participate in the pilot project take responsibility to record field data for their cattle or goat–raising operations. Based on the collected field data, DAF will evaluate the productivity and profitability of cattle and goat-raising. Any issues and problems that occur during the pilot project will be good references for improving future technical and business operations of cattle and goat-raising. Municipal LGUs will take responsibility to coordinate and monitor the field activities of the pilot project.

- Technical extension activities to the farmers concerning cattle and goat-raising.

Technical transfer activities will be carried out by DAF technicians, livestock technicians from the state agricultural office (DA-Provincial), LGU livestock technicians, and USM instructors.

- Group training programs of cattle and goat-raising.

The facilities of USM will be used for cattle and goat–raising training activities. These instructions will initially be conducted with the core farmers in the group and LGU technicians. Eventually, the core farmers can teach the techniques obtained from the project to the other farmers in the group. The training programs cover not only technical subjects, but also farming management, especially record keeping and basic accounting for cattle and goat-raising. DAF and USM will prepare basic plans and necessary materials for the training programs, and conduct them at proper places (Table 8-141).

Table 8-141: Contents of Group Training Programs for Promotion of Cattle and Goat-Raising

Training Title	Participants	Contents	Places
Group training on cattle or goat-raising.	Municipal LGU technicians and cattle or goat-raisers from model sites	- Forage production and utilization techniques. - General feeding management. - Storage feed making. - Record keeping. - Marketing system. - Field trip to cattle or goat-raising sites, etc.	USM or other institutes

3) Organization and strengthening of cattle or goat raisers' group.

In order to make shipping and dealing processes of cattle and goats by small raisers more

efficient, the raisers will be organized to form a producer group or a barangay cluster. They will be trained on the following subjects.

- Collect and analyze accurate market price.
- Exchange information on their production status.
- Organize shipping and selling products to brokers as a group and negotiate the sales at better prices and conditions.

4) Halal livestock

Trainings on halal livestock-raising methods will be provided, since most farmers do not yet entirely understand them.

Note: Activities related to meat processing are not included in this plan because there are no processed products being made from cattle and goat in the ARMM. In addition, the cattle or goat production amount is not enough to produce processed food.

5) Evaluation

The most important factor in the action plans on cattle and goat is for participating parties to completely obtain the necessary technology during the first phase. After confirming that the participants mastered the technology, the project will proceed to the second phase. If there are any shortages of acquisition on necessary technology, the project should be analyzed to identify all the possible reasons. If there are any subjects to be improved such as training manual or training program, the project have to review these issues before the second phase

(3) Management Plan

1) Project Management Structure

The main project office will be located in Cotabato City to allow smooth communication with the DAF head office. Senior technical advisors and local consultants will use the main office to operate and coordinate the project activities with DAF.

DAF will take on overall coordination of project activities. In particular, PLO will mainly work on monitoring activities at model sites in respective priority provinces. Municipal LGUs will also take responsibility for coordination and monitoring of cattle and goat raisers at model sites. DAF will also take charge of evaluations of the pilot projects, and conduct field studies with local consultants to collect important indicators and information from field activities and analyze them to conclude the evaluation results.

The relationship of relevant organizations is shown in Figure 8-16.

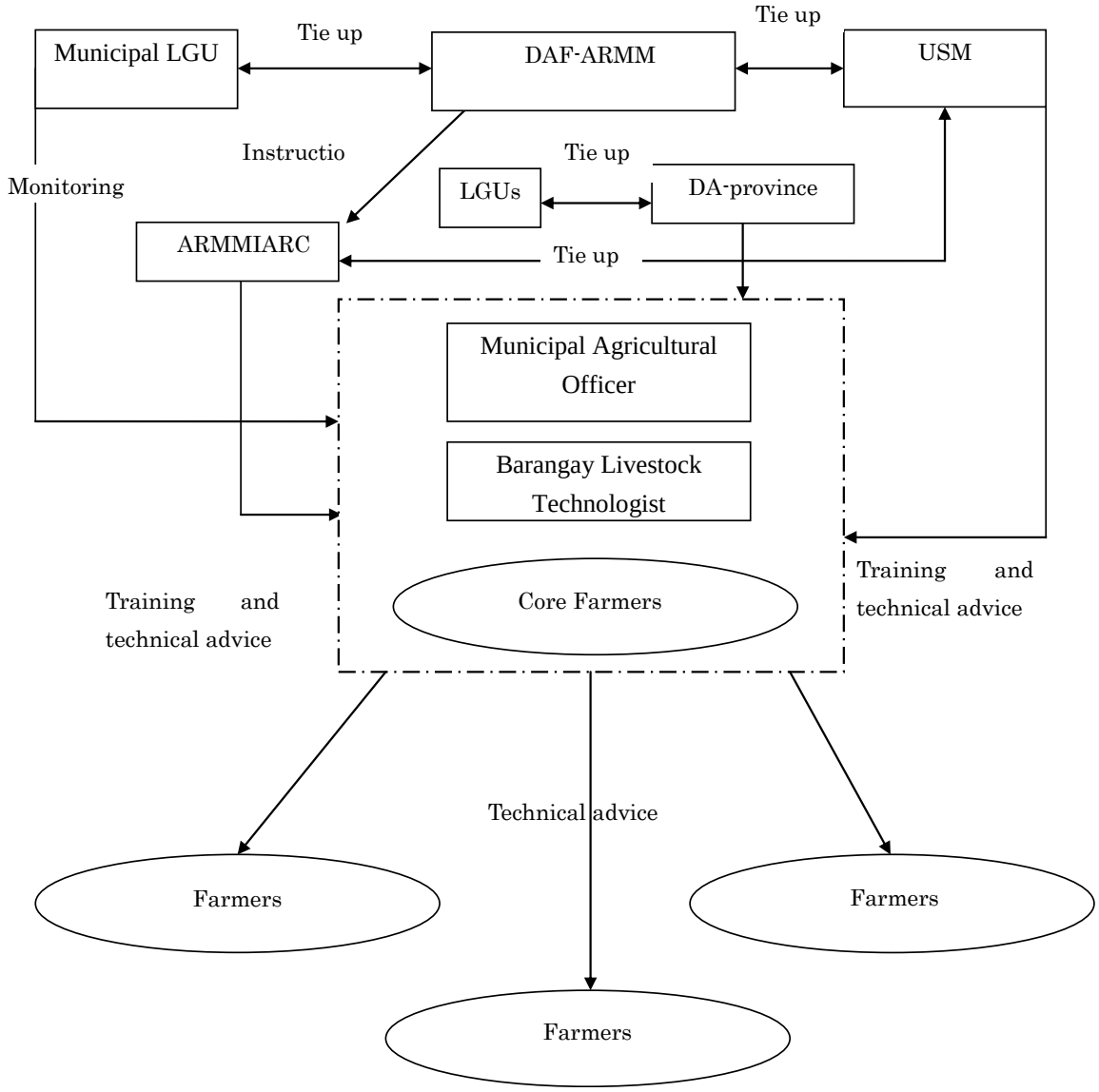


Figure 8-16: Relationship among the Organizations

2) Personnel Plan

The following Filipino consultants and local personnel are necessary to carry out all project activities (Table 8-142).

A Filipino expert in project management, with expertise in social and economic issues of the ARMM, is posted in DAF to ensure smooth management of the project and to conduct capacity development of DAF through on-the-job training. Other necessary personnel are available from partner organizations of the ARMM or outside of the ARMM.

Table 8-142: Personnel Plan (for the plan on cattle or goat)

Necessary Personnel	Number	Period (MM)	Agency/Organization
Senior technical advisor	1	8 MM x 10 years	Consultant (Filipino)
Project assistant in the main office	1	12 MM x 10 years	Consultant (Filipino)
Project coordinator	1	12 MM x 10 years	DAF-ARMM
Field activities (monitoring)	5	1 MM x 10 years	PLO (DA) in 5 target provinces
Field activities (monitoring)	5-6	1 MM x 10 years	MAO (Municipal LGU) in priority municipalities
Cooperative supports	3	When required	Provincial CDA officers in target provinces
Training lecturers	5	When required	USM

Note: A package of personnel is required to implement the plan for cattle raising or for goat raising. The package does not cover the plans for both kinds of livestock.

(4) Necessary Inputs

Necessary facilities and equipment are shown in Tables 8-143 and 8-144.

1) Facility Plan

Following facilities will be required for implementation of the plan.

Table 8-143: Facility Plan (for the plan on cattle or goat)

Facility	Specification/Structure	Area/Scale	Remarks
Main project office	Office space in Cotabato City	2-3 persons	
Cattle or goat shed	Construction material from local resources	2 units	1 constructed at USM 1 constructed at DAF-ARMM
Pasture and grassland	Recommended varieties of forage	3.0 ha	USM

Note: The same as the note in Table 8-142.

2) Equipment Plan

Following equipment will be required for the implementation of the plan.

Table 8-144: Equipment Plan (for the plan on cattle or goat)

Equipment	Quantity	Specification	Remarks
Office equipment	2	Copier, fax machine, desk, and chair	1 set for project offices 1 set for USM
Computer sets	3	Computer, printers, scanner, and etc.	2 sets for project offices 1 set for USM
Livestock-weighing balances	2	Maximum 1 ton	1 set for DAF-ARMM 1 set for USM

Note: The same as the note of Table 8-142.

(5) Plan of Operation

The project is roughly comprised of the first phase (demonstration phase, three years) and the second phase (implementation phase, seven years) of cattle and goat–raising promotion. The first phase will be carried in Maguindanao province. The second phase will be carried out in Lanao del Sur, Sulu, Tawi-Tawi, and Basilan provinces (Table 8-145).

Table 8-145: Plan of Operation (for the plan on cattle or goat)

Activities	Year										Remark
	1	2	3	4	5	6	7	8	9	10	
Project operational phases	Preparation Phase					2nd Phase					
			1st Phase								
Selection of priority municipalities											
Grassland renovation											
Technical extension activities concerning cattle or goat-raising											
Organization of farmers' group											
Group training concerning cattle or goat-raising and Halal livestock for LGU officers and farmers											
Monitoring of cattle or goat-raising in model sites											
Evaluation of overall model program											

(6) Estimated Project Cost

Estimated costs are shown in Tables 8-146 to 8-149.

1) Personnel Cost

The personnel costs indicated below will be required to implement the plan.

Table 8-146: Personnel Cost (for the plan on cattle or goat)

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Senior technical advisor	8 MM x 10 years	200,000/MM	16,000,000	Filipino consultant
Project assistant	12 MM x 10 years x 1 person	50,000/MM	5,000,000	Filipino consultant
Total Cost			21,000,000	

Note: The above cost is required to implement the plan for cattle raising or for goat raising. The total cost covers only one plan for cattle raising or for goat raising and does not cover the two plans.

2) Facilities and Equipment Cost

The facilities and equipment costs indicated below will be required to implement the plan.

Table 8-147: Facility and Equipment Cost (for the plan on cattle or goat)

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office equipment	1 set	200,000	200,000	
Computer sets	3 sets	150,000	450,000	
Livestock-weighing balances	2 sets	100,000	200,000	
Cattle sheds	4 unit	10,000	40,000	
Grassland renovation	3 ha	15000	45,000	
Total			935,000	

Note: The above cost is required to implement the plan for cattle raising or for goat raising. The total cost covers only one plan for cattle raising or for goat raising and does not cover the two plans.

3) Operational Cost

The operational costs indicated below will be required to implement the plan.

Table 8-148: Operational Cost (for the plan on cattle or goat)

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field monitoring	10 days x 12 months x 1 person x 10 years	2,500/day-person	3,000,000	Including transportation costs, meals, and allowances
Extension activities	15 days x 2 persons x 6 months x 7 years	2,500/day-person	3,150,000	
Evaluation study for overall model programs	15 days x 1 person x 5 municipalities x 4 times	2,500/day-person	750,000	
Total Cost			6,900,000	

Note: The above cost is required to implement the plan for cattle raising or for goat raising. The total cost covers only one plan for cattle raising or for goat raising and does not cover the two plans.

4) Group Training Cost

The costs indicated below will be required to implement the group trainings during the project period.

Table 8-149: Group Training Cost (for the plan on cattle or goat)

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Cattle or goat-raising training sessions	20 trainees x 5 days x 12 times	1,500 /day-person	1,800,000	Including transportation costs, meals, and allowances
Total Cost			1,800,000	

Note: The above cost is required to implement the plan for cattle raising or for goat raising. The total cost covers only one plan for cattle raising or for goat raising and does not cover the two plans.

(7) Collaboration with Other Projects

The project plans for cattle and goat raising promotion involve collaboration with the proposed projects of financial assistance and organizational strengthening in the master plan. The program can obtain a lot of information and idea from Human Capacity Development Project which is currently on-going including a goat raising component.

8-4-3-2 Chicken

Project Title:
Technical Improvement of Chicken Raising in the ARMM

(1) Project Summary

1) Background

Culturally, native chicken is integral to all special occasions, such as birthdays, baptisms, weddings, and fiestas. In recent years, the flavor of native chicken has improved, and restaurants that serve native chicken are increasing in urban areas, reflecting the present condition that mass-produced chicken is becoming less appealing to consumers.

However, it seems difficult for small-scale native chicken farmers to access suitable information for implementing efficient native chicken–raising management. Hence, productivity of native chicken raising is not high in the region. A proper method of native chicken raising suitable for each farm's condition provides a substantial improvement in the productivity of native chicken and stabilization of the farm management in the ARMM.

In addition, the process of a native chicken farmer dealing with a broker is not very efficient. Since small native chicken raisers have insufficient knowledge concerning chicken price, the price offered by brokers often does not accurately reflect market price. On the other hand, brokers of native chicken have difficulties to secure 10 or more chicken at once and need to negotiate with other farmers separately. When the small farmers in a barangay mutually exchange information about native chicken production, it leads to an improvement of this situation by providing native chicken shipments on a common schedule.

2) Target Areas

Target areas are existing native chicken–raising areas in five provinces. Maguindanao province will be the target province in the first phase (demonstration phase), and the other four provinces will be targeted in the second phase (implementation phase) based on the result of the previous phase (Table 8-150).

Table 8-150: Number of Target LGUs in the Project

Project	Target Areas
First phase (2 years)	3 model sites (barangay) in Maguindanao
Second phase (5 years)	1-2 priority municipalities in each target province (Maguindanao, Lanao del Sur, Sulu, Tawi-Tawi, and Basilan)

3) Target Group

The target group is small-scale farmers who are farming native chickens. The minimum farm size will be 5-10 heads. The desirable conditions for farmers are:

- Chicken raiser who actually raises chickens by himself/herself (absent owner/caretaker is not acceptable).
- Easy access to the group sites for training, field survey, and monitoring.
- Must agree to attend all the training sessions and follow-through activities.
- Must own his/her own land for native chicken raising (need minimum land space for chicken house and pastureland)

4) Project Period

The project is divided into two phases. The duration of the first phase (demonstration phase) is two years and five years for the second phase (implementation phase).

5) Project Purpose

Native chicken productivity and quality are improved by the introduction of appropriate native chicken–raising techniques.

6) Expected Outcome

- 70% of native chicken raising farmers, who are technically supported by the project in the pilot phase can increase the number of native chicken.
- Among the farmers of the second phase, 20% experience their first trial in native chicken raising.

7) Expected Impact

Native chickens are produced organically or with lesser vitamins, minerals, and antibiotics in their bodies than mass-produced chicken, which is an issue to today's food and health concerns. This is also the reason why specialty restaurants cater to health-conscious customers. Thus native chicken is gaining popularity. Native chickens with better quality worthy of higher prices have socio-cultural relevance due to traditional foods such as tinola (broiled chicken with vegetables and seasoning), inasal (grilled and barbequed chicken recipe that originated in

Bacolod City), adobo (dried chicken meat stew), pinikpikan (traditional chicken preparation commonly served in the Cordilleras), and tinobook (chicken delicacy preparation common in Zamboanga Sibugay).

Native chickens lay about 40–60 eggs per year in the traditional way. Therefore, if a farmer keeps five pullets and one rooster for one year, and each layer laid 40 eggs that year, that farmer would produce 40 birds @ 1.2 kg/bird, sold at Php 150/kg. Thus, gross income would be Php 7,200, and expenses for the cost of feeds and stock would be Php 3,000 or less.

(2) Activities

1) Selection of priority municipalities and model sites for native chicken-raising promotion

DAF is the organization responsible for managing the project. In collaboration with the Department of Agrarian Reform and Mindanao State University (MSU), they will select LGUs, target groups, and core farmers, and conduct baseline surveys as preparation. Several priority municipalities will be selected in the target provinces of Maguindanao, Lanao del Sur, Sulu, Tawi-Tawi, and Basilan, in order to promote native chicken–raising as a sort of local business model. To select priority municipalities which intend promote native chicken raising with enough capacity, the project will request municipal LGUs to submit proposals presenting their ideas and plans for promoting native chicken raising. After selecting candidates for priority municipalities, a team of DAF officers, MSU representatives, and local consultants will conduct field surveys at candidate areas. According to the results of the surveys, priority municipalities for native chicken raising will be determined.

2) Native Chicken–Raising Pilot Project

First, small-scale pilot projects will be conducted at three sites (barangay level) to verify the productivity and profitability of native chickens. Moreover, they will identify important issues and problems for the operation and business of native chicken production. The pilot projects will be prepared and carried out at selected sites in Maguindanao province because it is nearer to ARMMIARC and MSU than the other provinces. The farmers who participate in the pilot project will take responsibility to record field data for their native chicken–raising operations. According to the collected field data, DAF will evaluate the productivity and profitability of native chicken raising. Any issues and problems that occur during the pilot project will be good references for improving future technical and business operations of native chicken raising. Municipal LGUs will take responsibility in coordinating and monitoring the field activities of the pilot projects.

- Technical extension activities to the farmers concerning native chicken raising.

Technical transfer activities will be carried out by DAF technicians, livestock technicians from the state agricultural office (DA-Provincial), LGU livestock technicians, and MSU instructors.

- Group training programs for native chicken raising.

The facilities of MSU will be used for native chicken–raising training activities. These instructions will initially be conducted with the core farmers in the group and LGU technicians. Eventually, the core farmers can teach the techniques obtained from the project to the other farmers in the group. The training programs cover not only technical subjects, but also farming management, especially record keeping and basic accounting for native chicken raising. DAF and MSU will prepare basic plans and necessary materials for the training programs, and conduct them at proper places (Table 8-151).

Table 8-151: Contents of Group Training Programs for Promotion of Native Chicken Raising

Training Title	Participants	Contents	Places
Group training on native chicken raising.	Municipal LGU technicians and native chicken raisers from model sites	- Feeds production and utilization techniques - General feeding management - Incubation techniques - Record keeping - Marketing system - Field trip to native chicken raising sites, etc.	MSU or other institutes

3) Organization and strengthening of native chicken-raisers' group.

In order to make shipping and dealing processes of native chicken by small raisers more efficient, the raisers will be organized to form a producer group or a barangay cluster. They will be trained on the following subjects.

- Collect and analyze accurate market price.
- Exchange information on their production status.
- Organize shipping and selling products to brokers as a group and negotiate the sales at better prices and conditions.

4) Halal livestock

Trainings on halal livestock-raising methods will be provided since most farmers do not yet entirely understand them.

Note: Activities related to meat processing are not included in this plan because there are no processed products being made from native chicken in the ARMM. In addition, the production

amount is not enough to produce processed food.

5) Evaluation

The most important factor in the action plan is for participating parties to completely obtain the necessary technology during the first phase. After confirming that the participants mastered the technology, the project will proceed to the second phase. If there is any shortage of acquisition on necessary technology, the project should be analyzed to identify all the possible reasons. If there are any subjects to be improved such as training manual or training program, the project have to review these issues before the second phase.

(3) Management Plan

1) Project Management Structure

The main project office will be located in Cotabato City to allow smooth communication with the DAF head office. Senior technical advisors and local consultants will use the main office to operate and coordinate the project activities with DAF.

DAF will take on overall coordination of project activities. In particular, PLO will mainly work on monitoring activities at model sites in respective priority provinces. Municipal LGUs will also take responsibility for coordination and monitoring of native chicken raisers at model sites.

DAF will also take charge of evaluations of the pilot projects, and conduct field studies with local consultants to collect important indicators and information from field activities and analyze them to conclude the evaluation results.

The relationship of relevant organizations is shown in Figure 8-17.

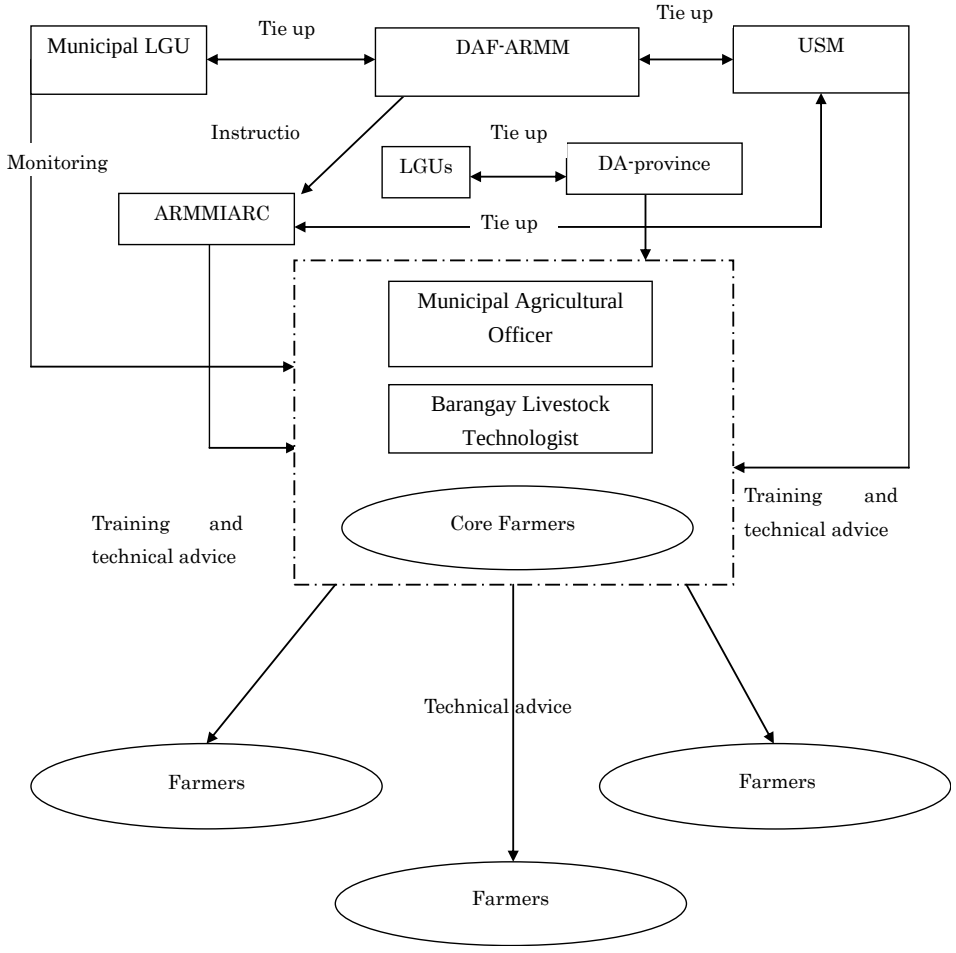


Figure 8-17: Relationship among the Organizations

2) Personnel Plan

The following Filipino consultants and local personnel are necessary to carry out all project activities (Table 8-152).

A Filipino expert in project management, with expertise in social and economic issues of the ARMM, is posted in DAF to ensure smooth management of the project and to conduct capacity development of DAF through on-the-job training. Other necessary personnel are available from partner organizations of or external to the ARMM

Table 8-152: Personnel Plan

Necessary Post	Number	Period (MM)	Agency/Organization
Senior technical advisor	1	8 MM x 7 years	Consultant (Filipino)
Project assistant in the main office	1	12 MM x 7 years	Consultant (Filipino)
Project coordinator	1	12 MM x 7 years	DAF-ARMM
Field activities (monitoring)	5	1 MM x 7 years	PLO (DA) in 5 target provinces
Field activities (monitoring)	5-6	1 MM x 7 years	MAO (Municipal LGU) at priority municipalities
Cooperative supports	3	When required	Provincial CDA officers in target provinces
Training lecturers	5	When required	MSU

(4) Necessary Inputs

Necessary facilities and equipments are shown in Tables 8-153 and 8-154.

1) Facility Plan

Table 8-153: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Main project office	Office space in Cotabato City	2-3 persons	
Native chicken demonstration farm	Construction material is utilized from local resources.	2 places	1 constructed at MSU 1 constructed at DAF-ARMM
Pasture and grassland	Recommended varieties of forage and crops	1.0 ha	MSU

2) Equipment Plan

Table 8-154: Equipment Plan

Equipment	Quantity	Specification	Remarks
Office equipment	2	Copier, fax machine, desk, and chair	1 set for project offices 1 set for MSU
Computer sets	3	Computer, printers, scanner, and etc.	2 sets for project offices 1 set for MSU

(5) Plan of Operation

The project roughly is comprised of the first phase (pilot phase, two years) and the second phase (implementation phase, five years) of native chicken–raising promotion. The first phase will be carried in Maguindanao province. The second phase will be carried out in Lanao del Sur, Sulu, Tawi-Tawi, and Basilan provinces (Table 8-155).

Table 8-155: Plan of Operation

Activities	Year							Remark
	1	2	3	4	5	6	7	
Project operational phases	Preparation	1st Phase	2nd Phase					
Selection of priority municipalities								
Technical extension activities concerning native chicken raising								
Organization of farmers' group								
Group training concerning native chicken raising and Halal livestock for LGU officers and farmers								
Monitoring of native chicken raising in model sites								
Evaluation of overall model program								

(6) Estimated Project Cost

Estimated costs are shown in Table 8-156 to 8-159.

1) Personnel Cost

Following personnel costs will be required for implementation of the project.

Table 8-156: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Senior technical advisor	8 MM x 7 years	200,000/MM	11,200,000	Filipino consultant
Project assistant	12 MM x 7 years x 1 person	50,000/MM	4,200,000	Filipino consultant
Total Cost			15,400,000	

2) Facility and Equipment Cost

Following costs will be required for necessary facilities and equipments during the project period.

Table 8-157: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office equipment	1 set	200,000	200,000	
Computer sets	3 sets	150,000	450,000	
Native chicken demonstration farms	4 places	50,000	200,000	
Total			850,000	

3) Operational Cost

Following operational costs will be required for implementation of the project.

Table 8-158: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Field monitoring	5 days x 12 months x 1 person x 10 years	2,500 /day-person	1,500,000	Including transportation costs, meals, and allowances
Extension activities	15 days x 2 persons x 6 months x 7 years	2,500 /day-person	3,150,000	
Evaluation study for overall model programs	15 days x 1 person x 5 municipalities x 4 times	2,500 /day-person	750,000	
Total Cost			5,400,000	

4) Group Training Cost

Following costs will be required for group trainings during the project period.

Table 8-159: Group Training Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Native chicken-raising sessions	20 trainees x 2 days x 12 times	1,500 /day-person	720,000	Including transportation costs, meals, and allowances
Total Cost			720,000	

(7) Collaboration with Other Projects

The project plan for native chicken–raising promotion involves collaboration with the proposed projects of financial assistance and organizational strengthening in the master plan.

8-4-4 **Quality Control (Sanitation)**

Project Title:
Improvement of the Work Environment of Food-Related Organizations in the ARMM

(1) Project Summary

1) Background

A hygienic work environment is the very basis for assuring the quality of food products. However, the hygienic status of work environments in food-related organizations was found to be poor through surveys. Although improving and leveling up the hygiene in work environments of food-related organizations is indispensable for the ARMM, it seems at the same time that nothing will happen relying solely on individual organizations. The local administration must think about and take appropriate actions to address this issue. This will create a baseline willingness for most of the food-related organizations to start to think about the importance of acquiring sanitary permits, LTOs, and even halal certificates, to secure a better future for their businesses.

The project aims to formulate an independent body by DTI with the collaboration of the relevant local administrative units to repeatedly instruct, give guidance to, and address food-related organizations until they acquire sanitary permits, LTOs, and/or halal certificates.

2) Target Areas

The project targets all five provinces of the ARMM.

3) Target Groups

The target group is food-related organizations in each province (primary product producers, food processors, food warehousing, ice makers, food transporters, food brokers, food wholesalers, food retailers, caterers, food package manufacturers, food additive manufacturers, food equipment and utensil manufacturers, etc.).

4) Period

Starting immediately after the acceptance of this report, the project will last for 10 years. The results of the activities must be assessed periodically to check the suitability of the direction for possible alteration.

5) Project Purpose

The project's purpose is to make food-related organizations acquire sanitary permits, LTOs, and/or halal certificates.

The independent body will help and offer support by giving guidance to the food-related organizations so that they can obtain sanitary permits, LTOs, and/or halal certificates.

6) Expected Outcome

The accomplishment indicator is the number of food-related organizations in possession of a permit and/or certificate (Table 8-160).

Table 8-160: Number of Organizations with Permit/Certificate

	Current number	Number in 5 years	Number in 10 years
Sanitary Permit	27	130	260
LTO	5	25	50
Halal Certificate	3	15	30

7) Expected Impact

A hygienic work environment is the basis of the food business, and it is difficult to estimate the economic impact and outcomes directly coming from realizing a hygienic work environment in food-related organizations. However, it is quite clear that no one will be interested in buying products produced in unacceptable circumstances. Today safety is the first thing people acquire from foods, and hygiene is a fundamental requirement for safety. Increasing the number of licensed or certificated food-related organizations will give confidence to the consumers of the markets, thereby pulling up the bottom line of the food-related industries in the ARMM.

In five years' time and in 10 years' time, the independent body will try to achieve such numbers of food-related organizations in possession of permits and/or certificates as listed in the above accomplishment indicators by giving instructions and/or guidance.

(2) Activities

1) Foundation of the independent body

The independent body will be formulated and founded by DTI with collaboration of relevant local units, and the body will settle the initial direction with the assistance of the Food Development Center, Manila. (The Davao Food Safety Team comprising the DTI and FDA is a

good example of such a body.)

2) Propagation of the importance of having a sanitary permit, LTO, and/or halal certificate to food-related organizations

For small or family-operated organizations: Periodically give hygienic guidance on basic matters as it is done by the Department of Health (DOH) until the sanitary permit is obtained.

For organizations with a sanitary permit: Explain the importance of acquiring a LTO to expand the food-related business, and give periodic guidance on how to be in conformity with Administrative Order 153s.2004, until a LTO is obtained. (Guidance will be based on Good Agricultural Practice (GAP), Good Manufacturing Practice (GMP), Hazard Analysis and Critical Control Point (HACCP), microorganisms and their control, allergies, chemical hazards, physical hazards, labeling, etc.)

It is important that the method of guidance is assessed from time to time through monitoring activities. It could be an alternative to priority-select some food-related organizations for better efficiency, especially during the initial period, because the increase of food-related organizations in possession of permits and/or certificates might encourage others in the same industry.

3) Education and training of guidance personnel

The personnel giving the guidance to or training the food-related organizations should not be inspectors or assessors of sanitary permits, LTOs, and/or halal certificate at the same time. It is necessary to deploy suitable personnel as instructors. They must have sufficient knowledge of GAP, GMP, HACCP, microorganisms and their control, allergies, chemical hazards, physical hazards, labeling, etc.

To educate and train the instructors, even to renew their knowledge and skills, it might be a good idea to utilize the Food Development Center in Manila. The training must be repeated periodically.

During the time personnel are offering guidance, it may be necessary to analyze samples of products to check the effectiveness of the guidance. Laboratories recognized by the FDA can be used for this purpose.

4) Evaluation

Even though the assessment of the method of guidance is conducted from time to time, the

result of the first five years period must be analyzed especially when the target figures have not been achieved. The reason could be the scarcity of incentive toward the markets, the mentality of the proprietor, the scarcity of finance, or some others. Based upon the analysis, the direction of the guidance may be altered accordingly. However, the continuation to give the guidance throughout the planed period is most important.

(3) Management Plan

Management plans are shown in Figure 8-18 and Table 8-161.

1) Project Management Structure

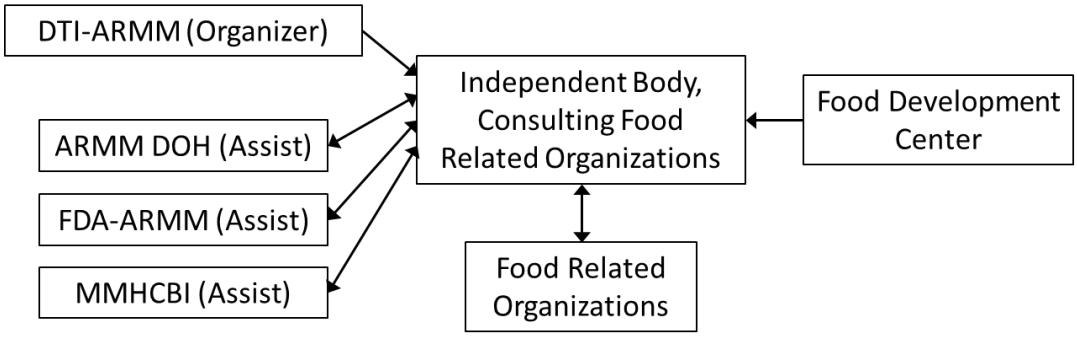


Figure 8-18: Organization Structure of the Project

2) Functional Explanation

Table 8-161: Functions of Organizations and Personnel to Implement the Project

Organization	Function
DTI-ARMM	DTI-ARMM will organize and manage the independent body. It could allocate its own personnel for managerial purposes.
ARMM DOH	ARMM DOH will provide consultation whenever requested. It could allocate its own personnel to work independently as instructors.
FDA-ARMM (Food and Drug Administration in the ARMM)	FDA-ARMM will provide consultation whenever requested.
MMHCBI (The Muslim Mindanao Halal Certification Board, Inc.)	MMHCBI will provide consultation whenever requested. It could allocate its own personnel to work independently as instructors.
Food Development Center	By request of the independent body, the Food Development Center will mainly provide the training for the instructors.

(4) Necessary Inputs

Personnel, facilities and equipment plans are shown in Tables 8-162 to 8-164.

1) Personnel Plan

Table 8-162: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Manager/instructor (backup)	1	12 MM x 10 years	Could be from DTI-ARMM
Instructors	3	12 MM x 3 x 10 years	
Secretary	1	12 MM x 10 years	

2) Facility Plan

Table 8-163: Facility Plan

Facility	Specification/Structure	Area/Scale	Purpose
Office	Office space for 5	Cotabato	Rent

3) Equipment Plan

Table 8-164: Equipment Plan

Equipment	Quantity	Specification	Purpose
Office equipment	1	Copier, fax, desks and chairs	For office
Computer set	1	5 computers, printer, etc.	For office

(5) Plan of Operation

The operation plan of the project is shown in Table 8-165.

Table 8-165: Plan of Operation

Activities	Agency	Schedule (Year)									
		Pilot Phase/Implementation Phase									
		1	2	3	4	5	6	7	8	9	10
Training of instructors (GAP, GMP, HACCP, etc.)											
Guidance to the food related organizations											

(6) Estimated Project Cost

Estimated project costs are shown in Tables 8-166 to 8-169.

1) Personnel Cost

Table 8-166: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Instructors	3 x 12 MM x 10 years	50,000/MM	18,000,000	
Secretary	1 x 12 MM x 10 years	30,000/MM	3,600,000	
Total Cost			21,600,000	

2) Facility and Equipment Cost

Table 8-167: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office equipment	1 set	150,000	150,000	
Computer set	5 sets	170,000	850,000	
Total Cost			1,000,000	

3) Operational Cost

Table 8-168: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office running cost	1 set x 12 months x 10 years	15,000/month	1,800,000	
Training & guidance to the food-related organizations	4 months x 3 days x 3 times/month	15,000/time/month	21,600,000	Includes travelling cost, hotel charge, and allowance
Total Cost			23,400,000	

4) Training and Seminar Cost

Table 8-169: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Training and seminar of instructor	1 person x 10 years (5 days/time)	400,000/year	4,000,000	Training by Food Development Center
Total Cost			4,000,000	

(7) Collaboration with Other Projects

In harmony with the progress of the guidance conducted by the independent body, FDA will have to strengthen its function by gradually adding its own inspectors. It is advisable for the instructors of the independent body to have some managerial knowledge as well as financing knowledge for advising purposes.

8-5 Distribution Infrastructure

Project Title:
Improvement in Livelihood and Strengthening of Small-Scale Community by Maintenance of Distribution System in the ARMM

(1) Project Summary

1) Background

The ARMM is essentially an agriculture-rich region, but poor road conditions adversely affect the process of trading to market. During rainy seasons, even four-wheel drive vehicles cannot reach the production area to bring in the farmers' products, and even if they can take those agricultural products, there is a high spoilage rate due to the big bumps and bulges in the farm-to-market roads. Moreover, high transportation cost, unfair dealings, and an undeveloped quality control are obstacles for industrial development in the region.

Local farmers should know the market requirements for proper management of product trading. Continuous communication is indeed dispensable for establishment of common perceptions of critical issues and problem resolution among stakeholders in relation to the distribution of agro-products in the region.

2) Target Area

All provinces of the ARMM have the potential to development local industry.

3) Target Group

The target group will be farmers' groups or farmers' cooperative groups.

4) Project Period

The project period will be ten years. The project is divided into two phases. The first, verification phase will be three years. The second, expansion phase in each province will be seven years.

This action plan can effectively be practiced with an agricultural action plan simultaneously.

5) Project Purpose

To improve the living standards of small-scale farmers through the development of

consolidation centers.

6) Expected Outcome

- Capacity of DAF/LGUs to manage work, i.e., planning, implementation, monitoring, and evaluation with documentation ability, is improved.
- Community consolidation places for small-scale farmers, cooperatives, middlemen, traders, etc., are improved or established.

7) Expected Impact

- Farmers' income is strengthened and stabilized.
- Simple road repair construction methods are adopted in agricultural groups and communities, and sustainable maintenance of the road is practiced by the communities.

(2) Activities

1) Preparation of project management

DAF and LGUs will be the organizations responsible for managing the project. They will select target areas and target groups and conduct baseline surveys as preparation. DAF-ARMM and LGUs will conduct planning, implementation, monitoring, and evaluation of the project.

2) Improvement of consolidating center

A farmers' group and cooperative will incorporate and establish a consolidating center to make it easy to congregate traders' cargos (Figure 8-19). This enhances the opportunities for communication between producers and traders and may promote fair trading between them. Hence, the improvement of the distribution environment can increase farmers' income and stabilize their livelihoods.

Figure 8-19: Consolidation (Image)

The farmers will discuss and decide on the location of the consolidating center for agricultural products. The following facilities are required for a consolidating center.

- Consolidation station with roof
- Parking area
- Warehouse
- Scale
- Whiteboard

It is desirable to improve the distribution environment, to install the consolidation center for every farmer's group or cooperative, in order to expand agricultural products broadly from the product area. Consequently, the consolidation center can be connected with in a distribution network. Ten consolidation centers will be installed in the second phase for a broader distribution network connection. It is also desirable for cold storage to be installed in a consolidation center for improving the distribution of products, though the installation cost is high.

3) Rehabilitation of road from farm to market

It is economically effective to maintain dirt roads using sandbags, as shown in Figure 8-20. This method has been used in road maintenance work for hundreds of years in Japan and is suitable for community-based road maintenance.

Figure 8-20: Sandbag Technology of Road Rehabilitation (Image)

4) Evaluation

Three years after the launch of the project, DAF and LGUs will evaluate the effects of the

project in pilot phase. The project will proceed to the implementation stage with according to the following conditions.

- DAF and LGU conduct appropriate planning, implementation and monitoring of the project.
- Products are distributed steadily and periodically at the consolidation center, and farmers' groups and cooperatives can manage the center by themselves.
- Farmers of other areas form agricultural groups and they ask the project to install a consolidation center.

(3) Management Plan

1) Project Management Structure

DAF/LGUs will plan, implement, and monitor the whole project (Table 8-170).

Table 8-170: Functions of Organization and Personnel to Implement the Project

Organizations/ Personnel	Function
DAF-ARMM/LGUs	Performing project management, planning, implementation, and monitoring. Coordinating with other organizations and instructing subordinate organizations and personnel of LGUs like DA Province.

2) Personnel Plan

An expert in the field of project management/farming who is knowledgeable about the social and economic issues of the ARMM will be posted in DAF/LGUs to support the smooth management of the project and to conduct capacity development of DAF/LGUs through on-the-job training in the pilot phase (Table 8-171). Other necessary personnel are available from partner organizations within or outside of the ARMM.

Table 8-171: Required Expertise in Project Implementation

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project management/advisor	1	10 years	Hired and posted in DAF-ARMM/LGUs
Assistant	1	10 years	Hired and posted in DAF-ARMM/LGUs

(4) Necessary Inputs

Necessary facilities and equipment are shown in Tables 8-172 and 8-173.

1) Facility Plan

Table 8-172: Facility Plan

Facility	Specification/Structure	Area/Scale	Remarks
Consolidation structure with roof	12 m × 15 m	180 m^2	LGUs
Parking area	20 m × 40 m	800 m^2	LGUs
Warehouse	10 m × 15 m × 3 units	150 m^2 x 3	LGUs

2) Equipment Plan

Table 8-173: Equipment Plan

Equipment	Quantity	Specification	Purpose
Scale	1	With computing function	Measure products
Whiteboard	1	With photocopy function	Display dealings
Sandbags	3,000	Cloth bag with sand for 15pcs/m 200m	Rehabilitate road
Survey gear	1	Level, transit, measure	Road survey
Compaction equipment	1	Compaction equipment for road	Rehabilitate road
Shovel	10	To make “donou” (sandbags)	Rehabilitate road
Computer	1	Laptop computer	Documentation in DAF-ARMM/LGUs
Printer	1	Printer with photocopy function	Documentation in DAF-ARMM/LGUs

(5) Plan of Operation

The operation plan of the project is shown in Table 8-174.

Table 8-174: Plan of Operation

Activities	Agency	Schedule (Year)									
		Pilot Phase			Implementation Phase						
		1	2	3	4	5	6	7	8	9	10
Pilot Phase											
Project management	DAF LGUs	■	■	■	■	■	■				
Monitoring of field activities	DAF LGUs		■	■	■	■	■				
Expansion Phase											
Project management	DAF						■	■	■	■	■
Monitoring of field activities	DAF LGUs						■	■	■	■	■

(6) Estimated Project Cost

Project costs are roughly estimated as follows (Tables 8-175 and 8-176).

1) Personnel Cost

Table 8-175: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Project management/advisor	6-8 MM × 10 years	200,000/MM	12,000,000-16,000,000	Filipino consultant
Assistant	12 MM × 10 years	100,000/MM	12,000,000	Filipino consultant
Total Cost			24,000,000-28,000,000	

2) Facility and Equipment Cost

Table 8-176: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase > 1 Location				
Consolidation structure with roof	1	250,000	250,000	120 m × 150 m (LGUs)
Parking area	1	100,000	100,000	20 m × 40 m (LGUs)
Warehouses	3	150,000	450,000	10 m × 15 m (LGUs)
Scale	1	50,000	50,000	
Whiteboard	1	10,000	10,000	
Sandbags	3,000	30	90,000	200 m (Rehabilitation length) 15pcs/m
Survey gear	1	80,000	80,000	Transit, level, tape measure
Compaction equipment	1	150,000	150,000	Compaction rammer
Shovels	20	2,000	40,000	
Computer	1	50,000	50,000	
Printer	1	30,000	30,000	
Total Cost			1,300,000	
< Implementation Phase > 10 Locations				
Locations	10	1,300,000	13,000,000	
Total Cost			13,000,000	

(7) Collaboration with Other Projects

None

8-6 Marketing

Project Title:
Improvement of Market Access for Producers in the ARMM

(1) Project Summary

1) Background

One of the major marketing concerns for local producers in the ARMM is that they lack access to market information, a challenge that is more pronounced than in other regions due to various constraints such as financial difficulty or producers' weak market awareness. This means that the producers do not have much chance to sell their products to markets with fair market prices, and they are not able to acknowledge market demand or competitors' information. If they do not have this information, it is difficult for them to gauge reasonable prices and the competitiveness of their products in the market.

To accelerate the information-gathering ability of local producers and reinforce market competitiveness, the action plan for marketing aims to fill the gap between producer and market. DTI, in cooperation with other agencies and private business sectors, will take the major role in this action plan, assisting producers to gain more access to markets by supplying market information, expanding sales channels, managing satellite shops, and organizing events for marketing.

2) Target Areas

This action plan can be applied to all the potential municipalities in the ARMM.

3) Target Groups

This action plan can be applied to all the potential producers' groups and cooperatives.

4) Project Period

The overall project implementation period is 10 years. Approaches may vary in accordance with the progress of the action plan and target market. However, each action will be implemented seamlessly regardless of the period, upgrading approaches step by step. For the first few years, the action plan will focus more on establishing the institutional system of marketing promotion through the capacity building of DTI and other related agencies.

5) Project Purpose

The purpose of the project is to allow producers to have more access to markets by acquiring market information and creating new selling channels.

6) Expected Outcome

- Producers have enough information to judge the market value of their products in terms of quality, competitiveness, and fair market price.
- Producers can access more markets to expand their selling channels.
- DTI can provide assistance and necessary information to producers to develop their marketing skills.

7) Expected Impact

- Producers will be able to sell their products with higher prices.
- Producers will add more value to their products by improving the quality or adapting to market needs.
- DTI will accumulate experience and knowledge for marketing promotions

(2) Activities

1) Preparation

- The project review of institutional structures and approaches for marketing promotion are currently being undertaken by DTI and other agencies, including DAF, RBOI, BFAR, CDA, LGUs, the chamber of commerce, and DTI national. Through this reviewing process, the project will acknowledge those actors' marketing skill capacity and clarify the measures that should be strengthened.

- To determine what market information producers have, the project will conduct a survey on the provision of market information to producers. This survey's aim will be to clarify the accessibility of useful market information for producers' businesses, as well as who provides market information and the content of the information.

- Reviewing the results, the project will make an implementation plan to enhance marketing strategies among producers and government institutions. This includes a training plan for DTI officials who will be in charge of marketing promotion and the identification of the market information producers need for their marketing promotion.

2) Implementation – First Phase

- This phase is the first step for marketing promotion, helping producers acquire basic market

information such as fair market price or market needs. Although the period of this phase may be different by product and producer because of the level of technical skill, the product's marketability, or other factors, as a whole, this stage will be implemented over the first few years. This phase focuses more on providing producers with basic information to improve their marketing ability as well as helping them to expand their sales channels because their products are sometimes not able to meet market requirements in terms of quality, quantity, productivity, or associated factors at this stage. Hence, it is essential to provide producers with market information and requirements for enhancing the competitiveness of their products in advance of starting the marketing effort. This phase mainly targets the ARMM domestic market.

- By enabling producers to have more market information, such as the buying or selling prices of products, the project will strengthen the use of the existing systems for providing market information, in which DTI takes a major role. However, producers at present do not take much advantage of the information or use it effectively for their production and marketing. They neither have a connection to the information nor understand proper methods of marketing. Meanwhile, DTI has some communication channels, such as publishing and radio broadcasting, to deliver marketing information. DAF is also able to collect information about commodity prices and other market information. The project will reinforce this system of providing marketing information by developing the capacity of DTI officials, in both regional and provincial offices in charge of marketing. This capacity building will include i) training on data collection, analysis, and provision of marketing information; ii) visits to markets, LGUs, and producers to learn about their demands, concerns, interests, and other thoughts about marketing; and iii) collaboration with other agencies and institutions including DAF, BFAR, and the chamber of commerce, which currently have skills and information available for marketing development. In addition, the project will help DTI to introduce new sales channels to producers and improve the quality of their products. Through these actions, producers will obtain adequate market information and learn to make their products meet market needs.

- Operating a satellite shop as a showcase of local products is an effective way to collect market information from buyers or consumers, especially in terms of needs and trends, as well as to promote products and expand sales channels. The project and DTI will install shelves to display local products in public places such as airports or supermarkets in Cotabato City, Zamboanga City, or selected LGUs in the ARMM. In this phase, shopping areas are limited to within or near the ARMM region, and the project will not establish an

independent shop except roadside stalls selling vegetables or fruits. Most products in the ARMM are commodities or raw products, so they do not yet have much market appeal to end-consumers, and few products are suitable for direct selling. To reduce the risk of failure, therefore, the satellite shop in this phase should not be too large scale, and should focus on selected processed products that are easy to handle and do not need many facilities, such as cold storage.

3) Implementation – Second Phase

- In this phase, the project will take measures to extend the target market outside the ARMM, initially to major cities and other regions in Mindanao, and to Visayas or Luzon for some potential products. While continuing to implement the actions commenced in the first phase, the project will help producers acquire more sales channels. Through the first phase, DTI and producers will be able to access market information about price, demand, and other basic knowledge for marketing so they can make use of this information for their product development. In this second phase, the project and DTI will try to give producers more opportunities to expand their selling channels after they have enough knowledge and skills to strengthen their marketability in terms of competitiveness. Producers will be given such opportunities as business matching, trade fairs, or seminars. This phase will start around the fourth year of the project, when the first phase has achieved certain outcomes, possibly taking about three years. It may take at least five years for this phase to be successful.

- DTI is expected to provide producers with more market opportunities for sales expansion. DTI, working with the project, will implement those measures, including business matching, trade fairs, seminars, and business missions. The project will provide assistance so that DTI can improve its capacity to organize business matching between producers and buyers, distributors, merchandisers, and other related stakeholders in the market. The project will also share information with DTI about service providers for business matching, such as trade fair organizers, advertisers, and business consultants, as well as traders. DTI, with assistance from the project, will help producers prepare promotion tools for their products when they have business matching or trade fair opportunities.

- As with the first phase, the project may have a small section to handle selected products in Davao. In addition to displaying local products in some public places, the project will try to set up a small independent satellite shop, possibly in Cotabato City. This shop will mainly handle processed products along with fruits and vegetables. Selling data and feedback from customers collected through shop operations will be very useful information for improving

the products and further expanding the targeted market.

4) Implementation – Third Phase

- After being able to establish a certain market basis within Mindanao, the project and DTI aim to introduce some potential products with decent marketability to the nationwide domestic market, or overseas in some cases. This phase is expected to start around eight years after the launch of the first phase. To promote such products targeted at a large market, the marketing strategy needs to be more advanced and complex. This is not only related to issues regarding the product itself, such as productivity or quality control, but also more market-oriented issues like advertisement, packaging, consumer trends, and market segmentation. To address those matters, the project may collaborate with marketing specialists, not limited to those in Mindanao.

- Since this phase targets nationwide or overseas markets, producers will face tougher competition than ever in Mindanao. Hence, the project will need to provide them with strong assistance to increase opportunities to be acknowledged in the market. The project will have business matching and seminars in Manila, Cebu, and Davao to promote potential products of the ARMM, in cooperation with agencies and specialists such as DTI National, marketing consultancy firms, exporters, and domestic or foreign buyers.

- In this phase, the project may open an independent satellite shop in Davao. It is, however, still preferable to share the shop with other regions in Mindanao, because this can mitigate the management risk, and the producers can also exchange marketing information with each other for further product development. As DTI did in the IFEX Philippines 2011 (International Food Exhibition), the project will proactively introduce potential products of the ARMM at major trade fairs. For a case with particularly good potential, the project may organize a trade mission and send them to Manila or some foreign countries. In addition to public sector such as DTI and other agencies, private sector can contribute much to this action plan. Private sector is not only expected to be as a collaborator, but also as a major investor. For instance, businessmen may be able to join the project as a marketing consultant or advertisement specialist. Furthermore, they can be proactive in the project by managing satellite shops or organizing business matching, so that they can have commission income from these actions.

5) Evaluation

At the end of first and second phases, outcomes of the activities are evaluated. The project can

proceed to the next phase if the following criteria are achieved.

First Phase

- Training on marketing theory is implemented in 70% of targeted LGUs.
- Selected products are ready for sale at the stall or shelves in stores.

Second Phase

- The project conducts business matching or seminar at least three times a year.
- The project joins or conducts at least four trade fairs, business missions or other related activities through this phase.

(3) Management Plan

1) Project Management Structure

DTI will take a leading role in the project, with the project office located in the DTI regional office. The project will cooperate with various agencies, LGUs, and private sectors. During the first half of the project, actions will be implemented within the ARMM or with some institutions in Mindanao. Then, as the project extends to the target market outside the ARMM, project management will shift to collaboration with stakeholders outside the ARMM who are more specialized in marketing (Figure 8-21 and Table 8-177).

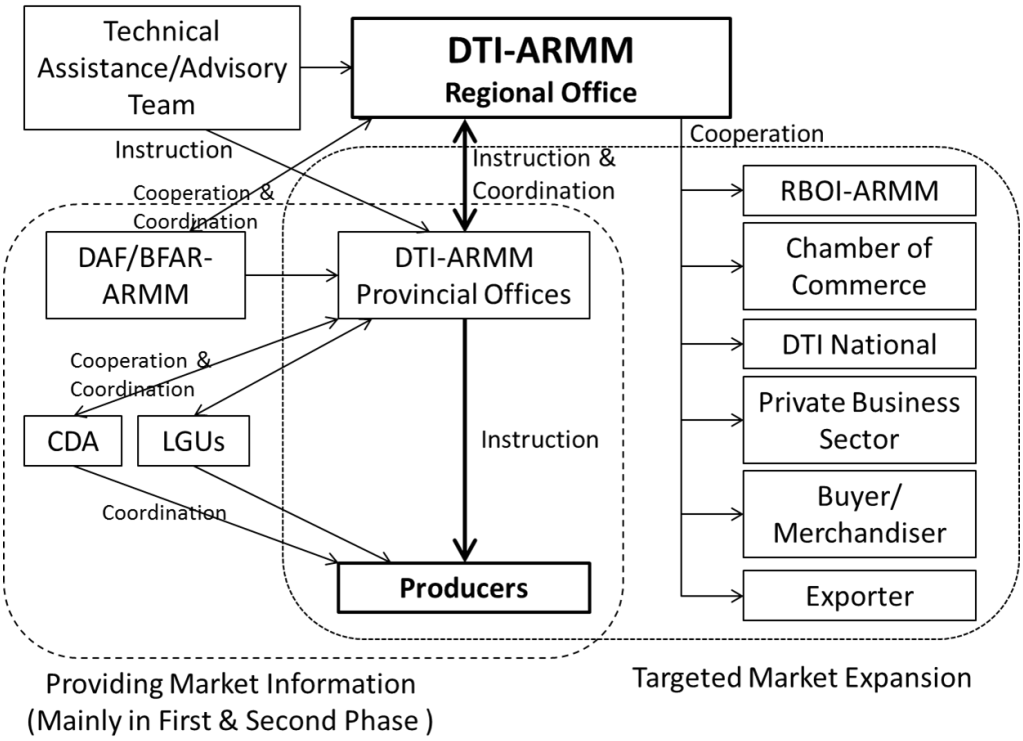


Figure 8-21: Organizational Structure of the Project

Table 8-177: Function of Organization and Personnel to Implement the Project

Organizations/Personnel	Function
DTI-ARMM	DTI-ARMM regional office will monitor the overall management of the project. Each DTI provincial office will be in charge of coordinating with and training producers in the respective province.
LGUs/CDA	LGUs/CDA will assist DTI-ARMM with field/community-based activities for producers, such as providing market information or training.
DAF/BFAR-ARMM	DAF/BFAR will share market information, including buying/selling prices, with the project. They will also cooperate with the project to improve the quality and productivity of products to be more competitive in the market.
RBOI, Chamber of Commerce, DTI National	These organizations will be collaborators in the sales channel expansion, by organizing business matching, trade fairs, and other opportunities.
Private business sector	The private sector will provide assistance to the project, e.g., marketing consultant, advertisement specialist, investment on marketing promotion.

(4) Necessary Inputs

Personnel, facilities and equipment plans are shown in Tables 8-178 to 8-180.

1) Personnel Plan

Table 8-178: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project manager	1	12 MM x 10 years	DTI-ARMM
Technical advisor	1	10 MM x 3 years 6 MM x 5 years 4 MM x 2 years	Hired by and posted in DTI-ARMM
Assistant officer	1	12 MM x 10 years	Hired by and posted in DTI-ARMM
Field officer	5	12 MM x 10 years	DTI-ARMM (Provincial)
Field coordinator	5	12 MM x 8 years	Hired by and posted in DTI-ARMM (Provincial)

2) Facility Plan

Table 8-179: Facility Plan

Facility	Specification /Structure	Area/Scale	Purpose
Satellite shop	Small shop	Cotabato City 10 m^2	Showroom for potential products
Satellite shop	Small shop	Davao City 5 m^2	Showroom for potential products

3) Equipment Plan

Table 8-180: Equipment Plan

Equipment	Quantity	Specification	Purpose
Office supplies	6	Computer, etc.	For project office and field offices
Cold storage	1	Refrigerator	For products to sell at satellite shop in Cotabato City

(5) Plan of Operation

The operation plan of the project is shown in Table 8-181.

Table 8-181: Plan of Operation

Activities	Agency	Schedule (Year)									
		First Phase			Second Phase					Third Phase	
		1	2	3	4	5	6	7	8	9	10
First Phase											
Preparation	DTI										
Collection of market information	DTI										
Training on marketing theory	DTI										
Set-up of satellite shop	DTI										
Second Phase											
Business matching, seminar	DTI										
Set-up of satellite shop	DTI										
Promote products	DTI										
Third Phase											
Business matching, seminar	DTI										
Set-up of satellite shop	DTI										
Promote products	DTI										

(6) Estimated Project Cost

Estimated project costs are shown in Tables 8-182 to 8-185.

1) Personnel Cost

Table 8-182: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Technical advisor	1 person x 68 MM (in 10 years)	200,000/MM	13,600,000	First phase: 10 MM/year Second phase: 6 MM/year Third phase: 4 MM/year (Filipino consultant)
Assistant officer	1 person x 12 MM x 10 years	30,000/MM	3,600,000	
Field coordinator	5 persons x 12 MM x 8 years	30,000/MM	14,400,000	First and second phase
Total Cost			31,600,000	

2) Facility and Equipment Cost

Table 8-183: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Office supplies	6 sets	150,000	900,000	
Satellite shop	1	500,000	500,000	Cotabato City
Satellite shop	1	200,000	200,000	Davao City
Cold storage	1	150,000	150,000	For a shop in Cotabato
Total Cost			1,650,000	

3) Operational Cost

Table 8-184: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Project office	1	300,000/year	3,000,000	
Field offices	5	120,000/year	6,000,000	
Satellite shop	1	480,000/year	2,400,000	Five years (Cotabato)
Satellite shop	1	240,000/year	480,000	Two years (Davao)
Total Cost			11,880,000	

4) Training and Seminar Cost

Table 8-185: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
Training on marketing theory	10/year	100,000	1,000,000	First phase
Business matching	5/year	150,000	7,500,000	
Trade fair	1/year	500,000	3,500,000	Second and third phase
Total Cost			12,000,000	

(7) Collaboration with Other Projects

This project can involve collaboration with various projects about marketing promotion. Partners can be both public and private institutions.

8-7 Finance

Project Title:
Promotion of Financial Services for Farmers, Fishermen, and MSMEs in the ARMM

(1) Project Summary

1) Background

Despite the huge demand from small-scale farmers, fishermen and MSMEs, only very limited financial services are provided by microfinance institutions (MFI), cooperatives, and banks in the ARMM. Given this situation, farmers, fishermen, and MSMEs have to depend on informal finance from traders, moneylenders, and relatives, although these lenders require high lending rates and impose unfavorable conditions, and their credit is often very small and not assured. As explained in Chapters 4 and 6, there are several challenges preventing farmers, fishermen and MSMEs from accessing financial services, such as insufficient capacity and fund of cooperatives and MFIs and mismatch of product design and demands. To cope with the challenges, the following three strategies are set and incorporated in the action plan.

- MF Promotion: Promote services of MFIs and FIs to expand their services to agriculture and fisheries as well as geographically in the ARMM (MF Promotion). By capacitating MFIs and cooperatives including introduction of new products for agriculture and fisheries as well as mobile banking, agents, village banking system, and financial literacy program, and by facilitating their access through coordination with relevant institutions such as municipal LGUs, it is expected that MFIs and cooperatives expand their operations to farmers, fishermen and to more LGUs including those in remote areas. There are many MFIs and cooperatives who are interested in expanding their operations. For the enterprises and cooperatives which require large amount of loans than those being provided by MFIs, services by the Land Bank of Philippines (LBP) and the Development Bank of Philippines (DBP) will be facilitated.
- Value Chain (VC) Finance Promotion: Promotion of financing systems/services utilizing existing value chain actors such as processors and traders[223] (VC Promotion). Utilization of VC actors through FIs such as the Land Bank will increase beneficiary farmers and

[223] Financial institutions can provide loans to farmers or fishermen by utilizing the relationships between the farmers/fishermen and processors or traders. For example, the contracts by farmers to sell their products to processors can be taken as alternative collateral. The Land Bank of Philippines introduced the program. (Refer to Chapter 4-5 Microfinance for the details.)

fishermen for their access to finance. Coconut, coffee, cassava, cacao, and seaweed are possible products to use VC finance.

- Group Fund Promotion: Capacitate the cooperatives and groups of farmers and fishermen to mobilize their savings and provide credit to their members, then enable them to utilize the services by MFIs and other Financial Institutions (FIs) such as the Land Bank and DBP.

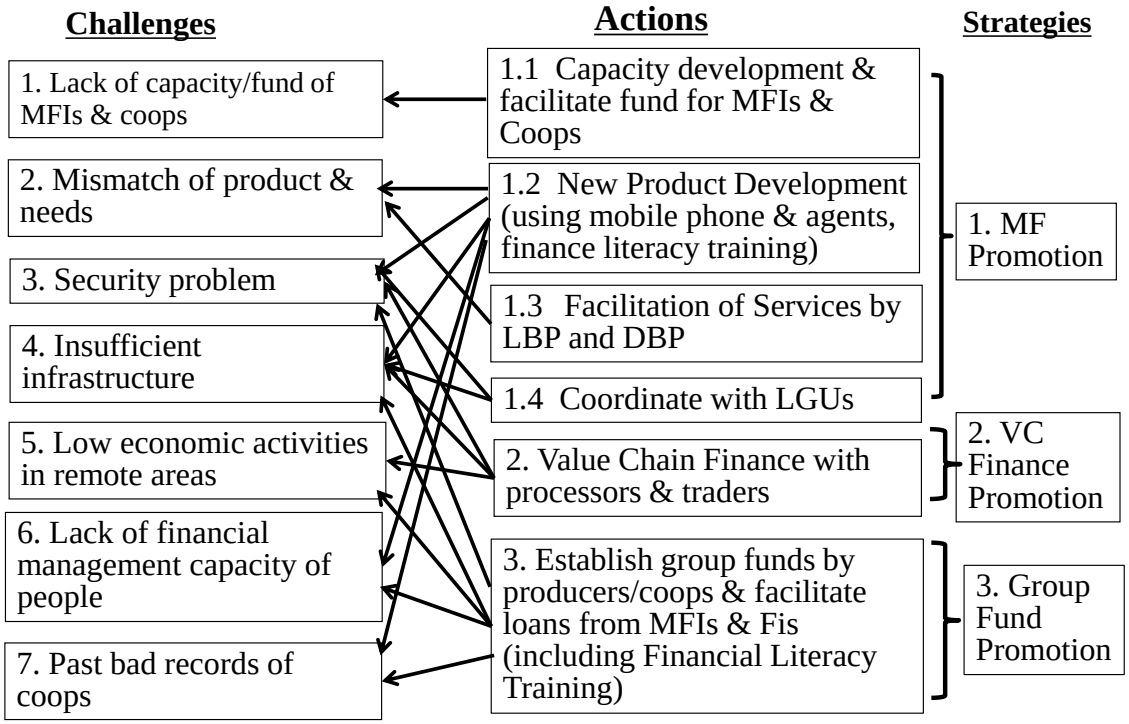


Figure 8-22: Challenges, Actions, and Strategies for Finance in the ARMM

Figure 8-22 explains the major challenges for access to finance in the ARMM and how the proposed strategies and actions will cope with these challenges.

- Challenge 1. Lack of capacity and fund of MFIs and cooperatives

  Action of 1.1: Capacity development and facilitation of fund will solve the issue.

- Challenge 2. Mismatch of products and needs

  Action of 1.2: New product development will solve the issue. The products are not limited to loans but also savings.

  Action of 1.3: Facilitation of services by LBP and DBP will assist MSMEs to access large and longer term loans which are not catered by MFIs.

- Challenge 3. Security problem and Challenge 4. Insufficient infrastructure

  For the security problem, it is expected that Action 1.4 Coordination with LGUs which are keen to invite MFIs will encourage the LGUs to protect MFIs and their clients in the area.

In the areas where MFIs have difficulties to access due to security and infrastructure problems, Action 1.2 New products using mobile phone or agents (traders or shops which will be working as branches of MFIs)[224] will improve the situation because the required visits to clients by MF officers for loan collection will be reduced. Action 2. Promotion of VC finance with VC actors, as well as Action of 3 Group funds will also address the problem because VC finance and group fund methods basically use the resources of people working and living in the areas.

- Challenge 5. Low economic activities in remote areas

  There are limitations for MFIs to cover all the area, in particularly remote areas where economic activities are low and with high risk in terms of security. In these areas, Action 3. Group fund promotion, meaning strengthening or establishing community based financial institutions or system, such as cooperatives and savings and credit groups and linking them to financial institutions are more practical measures. It is because community based organizations and systems are close to the beneficiaries and can utilize their information. They can also be operated at low cost and in more flexible and sustainable ways against the changes of political, economic, and social conditions.
- Challenge 6. Lack of financial management capacity of people

  Provision of financial literacy trainings on household budgeting, savings, debt management, and so on, will improve the capacity of farmers, fishermen, and processors and will change the dole-out mentality of the people.
- Challenge 7. Past bad records of cooperatives

  This problem is basically for the government financial institutions such as the Land Bank of Philippines. Strengthen the financial management of cooperatives including savings mobilization will assist them to capacitate these cooperatives. New products by MFIs such as for agriculture and fishery loans also may be able to provide financial services to the members of those cooperatives.

It is also necessary to capacitate farmers, fishermen, and MSEs for their basic financial understandings and skills. In consideration of the social conditions in the ARMM, such as a low level of education and the mindset of dependency among people, the activities will be taken step by step, in particular, for the capacity building of cooperatives and farmer/fishermen groups. This project will be conducted in collaboration with other proposed projects for technical assistance to farmers/fishermen/processors for their production, processing, marketing, and business development services (BDS). Provision of financial services to obtain necessary

[224] Philippines is the leading country for promotion of mobile phone banking in Asia, such as smart phone, although the application by MFIs in the ARMM has not yet started.

farming/fishing inputs, working capital, and facilities will contribute to the improvement and expansion of production, and synergy effects with those projects are expected.

2) Target Areas

The pilot phase will be implemented in all five provinces of the ARMM; Maguindanao, Lanao del Sur, Basilan, Sulu and Tawi-Tawi, considering the security situation. One to three municipal LGUs per province will be selected for piloting new products by MFIs and cooperatives, as well as strengthening cooperatives and producers' groups, based on the target areas of potential products and the availability of existing cooperatives. Selection will be made in coordination with DTI, CDA, DAF, and BFAR. The number of LGUs for the implementation phase will be determined based on the results of the pilot phase. However, the promotion activities for expansion of the MFIs and FIs as well as facilitation of VC finance will be done in wider areas and not be limited to those LGUs.

3) Target Groups

Target groups are the existing and/or newly established MFIs and cooperatives and groups of small-scale farmers and fishermen who are producing potential products or are processing these products. In the pilot phase, six MFIs and financial cooperatives will be given technical assistances, while ten cooperatives or groups of farmers and fishermen will be trained for group fund management. Ten MFIs and financial cooperatives and 30 cooperatives or groups will be strengthened in the implementation phase.

4) Project Period

The project is divided into two phases: the pilot and implementation phases. The period of the pilot phase is three years and that of the implementation phase is another seven years. Since the financial sector experiences rapid changes, such as those caused by various innovations using IT, the overall scheme for the implementation phase will be reviewed after the pilot stage.

5) Project Purpose

The production and businesses of small-scale farmers, fishermen, and processors will be increased by improving their access to finance in collaboration with other projects for potential products.

6) Expected Outcome

Expected outcome of the project is shown in Table 8-186.

Table 8-186: Expected Outcome of the Project

	Indicator	Baseline (as of 2011)	Pilot Phase (after 3 years)	Implementation (after 10 years)
1	Project management capacity of DTI-ARMM	To be strengthened	Strengthened	Strengthened
2	Number of LGUs covered by MFIs & financial cooperatives	41 LGUs (36% of total[225])	50 LGUs (42%)	70 LGUs (59%)
3	Number of active clients of MFIs and supported financial cooperatives	30,000 (0.7% of total population)	80,000 (2%)	200,000 (4.9%)
4	The number of active borrowers of agri/fishery loan products at MFIs and supported financial cooperatives	Very few	6,000	30,000
5	The number of MSMEs using business loans by LBP and DBP	N/A	30	100
6	The number of active borrowers using VC finance	N/A	2,000	7,000
7	Repayment rates of loans by MFIs, supported financial cooperatives, and other FIs in the ARMM	N/A	Over 90%	Over 90%
8	Percentage of producers, coops and groups trained and able to manage their group savings to enough to cater to their agriculture and fishery inputs	N/A	80%	80%
9	Percentage of producers' coops and groups trained and able to manage their group fund with their repayment rates being more than 90%.	N/A	60%	60%
10	Percentage of trained agriculture/fishery cooperatives in the ARMM using loans from MFIs and FIs.	N/A	50%	50%

[225] The current number of LGUs covered by financial cooperatives has to be verified.

7) Expected Impact

Income of target farmers/fishermen/processors will be increased by more than 30%.

(2) Activities

1) Preparation

- Select local experts on microfinance and group funds.
- Hold consultative meetings with major stakeholders to discuss the expansion of microfinance in the ARMM. The stakeholders will include government wholesale funders such as PCFC, NLDC, ACPC, MASS-SPECC, the Land Bank, DBP, MFIs, and donors such as JICA, WB, ADB, and USAID. The consultative meetings will be held annually to share the results and discuss the improvement of the project.

2) Promotion of MFIs and financial cooperatives to expand their operations in the ARMM

- Seminars for MFIs, financial cooperatives, LGUs and other stakeholders
  - Hold seminars, a kind of business-matching forum for financial services, inviting the leaders of LGUs, chambers of commerce, groups of farmers and other local stakeholders to understand the services offered by MFIs and FIs, the conditions needed for MFIs to expand their coverage areas, and discuss possible measures such as security protection by LGUs. Participating MFIs and FIs will include those that have interest in tapping into the ARMM market, which will be identified by DTI with the assistance of the microfinance experts.
  - DTI will monitor the outreach performances of MFIs and FIs.

- Assistance for capacity development and product development for agriculture and fisheries
  - Hold seminars for MFIs to understand the various options and best practices to expand their services for agriculture and fisheries, such as village bank systems using savings and credit groups, guarantee funds, value chain finance, leasing, and branchless banking (mobile phone banking, agents, etc.).
  - Select MFIs and financial cooperatives to be assisted.
  - Assess the capacity of selected MFIs and cooperatives, design training sessions/advice for the areas to be strengthened, and provide training sessions/advice. Training sessions include the TOT for financial literacy program, which will be implemented with DTI[226].
  - Assist in the developing or refining of loan and saving products for agriculture and fishery or refine existing products. The process will include the following stages: i)

[226] Existing training materials, such as those prepared by Microfinance Opportunity, will be used.

market research for potential products; ii) design prototype; iii) pilot test of the prototype; iv) finalize the product; v) full implementation; and vi) monitoring and evaluation.

- Facilitate funding and provision of guarantee fund for MFIs

  Facilitate provision of loan funds and guarantees for MFIs and cooperatives to expand their services[227].

- Facilitate provision of loans to MSMEs by the LBP and DBP
  - Hold meetings with the LBP and DBP to discuss on how to streamline the processes and requirements for loans to facilitate services to MSMEs.
  - Strengthen the linkages between the branches of LBP and DBP and DTI, DAF, and BFAR to facilitate their financial services to prospective enterprises in the ARMM.
  - Provide information on available services by the LBP and DBP to prospective MSMEs through provincial offices of DTI.

3) Facilitation of VC Finance for farmers, fishermen, and processors of potential products

   Identify candidate VC actors for potential products, such as processing companies, traders, wholesalers, and input suppliers, and hold consultative meetings with them, groups of farmers and fishermen dealing with them, and the Land Bank, and facilitate the VC financing and conduit scheme of the bank.

4) Trainings and assistances to groups of farmers/fishermen/processors and cooperatives

- Preparation
  - Design and conduct training sessions for the selected technical advisory institutions and DTI provincial officers for the financial education training program, and manage savings and credit groups[228]. Institutions that have already developed such training materials may be allowed to use their own materials after their materials have been reviewed.
- Implementation of trainings sessions and monitoring

  The proposed approaches that will be further refined at the beginning of the project are

[227] The candidate funding partners will be government wholesale institutions such as NLDC, PCFC, and MAAPACPC, and donors' program such as Social Fund. Candidate institutions to provide guarantee funds will be LGUs, Quadancor, and Credit Surety Fund to be established with LGU, cooperatives, and DBP, which is currently promoted by the central bank of the Philippines.

[228] The basic approaches to building the savings and credit groups will be based on the successful model of the Credit Union Empowerment and Strengthening (CUES) project done in Mindanao, including the ARMM, as well as the graduation model being done by CGAP.

indicated below.

- Training sessions on financial literacy and group savings management including bookkeeping. Small groups consisting of five to six members will be established, and regular savings will be designed according to their production cycle. They will be encouraged to open their group account at an MFI or the nearest FIs, or to use mobile remittance services. Where this is difficult, the project will provide a safety box for the safekeeping of the money.
- Monitor savings activities. Saving activities should be continued for at least eight weeks.
- After confirming regular savings and proper management, such as safekeeping of the money and bookkeeping, from four to six Savings and Credit Association (SCA) groups and train the SCAs to establish and manage funds to loan the mobilized savings to their members[229].
- Monitor and provide advice for the management of the revolving fund.
- Assist the cooperatives and groups to get access to loans from MFIs and FIs. Explore various options to facilitate their services, such as guarantees by Quedancor and LGUs.

5) Monitoring of field activities and effect of training, and evaluation

DTI ARMM will establish the monitoring system including reporting structure with the project manager. DTI with their provincial offices, project manager, and local experts will monitor the progress of project activities and evaluate the effects during the project period. The results of the pilot stage will be incorporated in the design of the implementation stages

Before the end of the pilot phase, DTI with project manager, provincial officers, and local experts will evaluate the effects of the project. The following are the conditions in order for DTI to proceed to the implementation stages.

- DTI with provincial offices implement, monitor and evaluate the pilot phase and produce appropriate monitoring and evaluation reports as planned.
- 80% of the target results are achieved.
- Concerned partners, in particular, CDA and LGUs appreciate the project and agreed to proceed for implementation period.
- Since the progress of financial sector is very rapid, the project design and targets will be reviewed and revised based on the latest situation.

[229] Provision of loans can be in kind, such as farm inputs, to avoid the misuse of the loan. Additional seed capital for the fund may be lent to the groups based on the amount of the mobilized savings. The additional loan fund will be repaid to the project by the groups during the three years.

During the implementation period, the same evaluation process stated above will be taken after finishing the third year of the period.

(3) Management Plan

1) Project Management Structure

DTI is the main technical advisory institution that will perform planning, implementation, and monitoring of the project in collaboration with CDA, DAF, BFAR, target LGUs, local technical advisors, and MASS-SPECC or MMC. Functions of these institutions are as the following (Table 8-187 and Figure 8-23).

Table 8-187: Functions of Organizations and Personnel to Implement the Project

Organizations/ Personnel	Function
DTI-ARMM	・ Perform project management and coordination. ・ Lobby major stakeholders such as national government institutions, for assistance to MFIs and cooperatives operating in the ARMM. ・ Facilitate expansion of MFIs/financial cooperatives and VC program.
CDA-ARMM	Assist the project in providing information and data on cooperatives in the ARMM, monitoring the activities to strengthen cooperatives and to facilitate registration of target groups and cooperatives.
DAF, BFAR	Coordinate with DTI-ARMM to provide technical assistance to producers' cooperatives and groups.
LGUs	Provide a safe operational environment for stakeholders. Facilitate assistance to MFIs and cooperatives by providing guarantee funds or lobby prospective funders such as Land Bank. Support local technical advisors in their training sessions and monitoring of cooperatives/groups.
Experts on MFI/ cooperatives	Provide technical assistance to MFIs and cooperatives.
Experts on group funds	Train producers' cooperatives and groups for them to organize and manage a savings and credit fund.
MASS-SPECC/ MMC	Provide financial and technical assistance to existing financial cooperatives to strengthen and expand their financial services.
NLDC, PCFC, Land Bank, Quedancor, etc.	Provide loans or guarantees to MFIs and cooperatives.

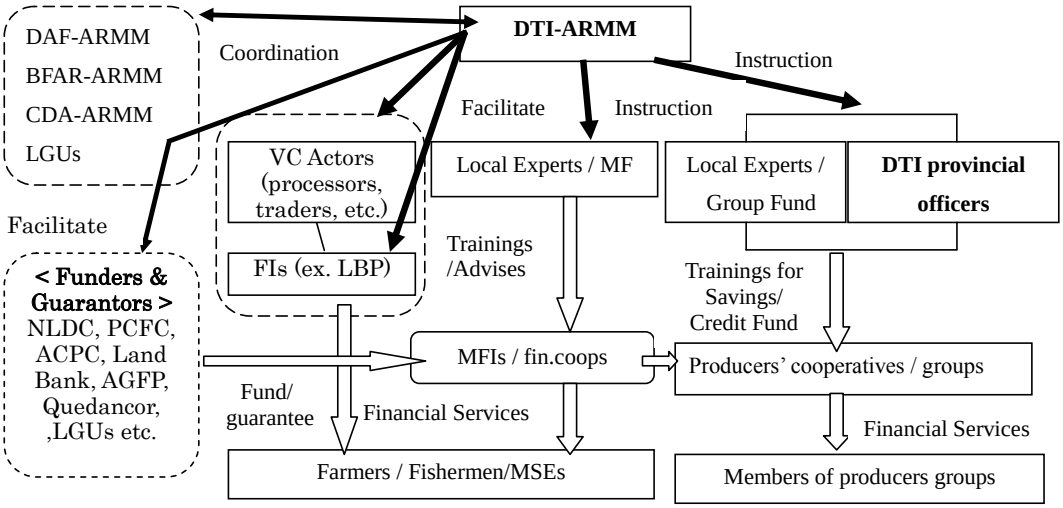


Figure 8-23: Organization Structure of the Project

(4) Necessary Inputs

Necessary inputs for the project are shown in Tables 8-188 and 8-189.

1) Personnel Plan

The following personnel will be hired to implement the project for pilot phase and implementation phase. They will work with the DTI and other related agencies.

Table 8-188: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project manager/advisor	1	7 MM x 3 years 4 MM x 7 years	Hired by and posted in DTI-ARMM.
Local experts/MF & cooperatives	2	8 MM x 3 years, 6 MM x 7 years	Filipino consultants
Local experts/group funds	3 (for pilot), 5 (for expansion)	6 MM x 3 x 3 years 6 MM x 5 x 6 years	Local NGOs in each province

2) Equipment Plan

The following equipments will be procured for the two phases of the plan. The kinds and amount of the production inputs to be provided to target groups will be decided based on the needs of the groups

Table 8-189: Equipment Plan

Equipment	Quantity	Specification	Remarks (Purpose)
Computer	1	Desktop computer and monitor	To manage project implementation and monitoring at DTI-ARMM
Printer	1	Printer with photocopy function	Documentation in DAF-ARMM
Office stationery	1	Set of stationery items, such as pens, notebooks, envelopes, etc.	To implement the project smoothly
Safety boxes	15	Small safety box with key	For cooperatives/groups to keep cash
Vehicles	2	4 x 4	DTI offices (Maguindanao & LDS)
Production inputs such as farm inputs	21 sets	To be determined based on the production activities by cooperatives/groups	As additional capital to group fund

(5) Plan of Operation

The operation plan of the project is shown in Table 8-190. The plan is divided into two phases: the pilot phase (for three years) and the implementation phase (for seven years). The detailed activities and their contents will be adjusted based on the evaluation results of the pilot phase.

Table 8-190: Plan of Operation

Activities	Agency	Schedule (Year)									
		Pilot Phase			Implementation Phase						
		1	2	3	4	5	6	7	8	9	10
< Pilot Phase >											
(1) Project management	DTI										
(2) Promotion of MFIs & existing financial cooperatives											
Seminars for MFIs, cooperatives, LGUs & other stakeholders	DTI/ Experts										
Assist to develop capacity & products for MFIs & cooperatives	Experts										
Facilitate funding/ guarantee	DTI										
(3) Facilitate VC finance	DTI										
(4) Trainings sessions and assistance to groups of farmers/fishermen/processors and cooperatives											
Preparation	DTI/ Experts										
Training sessions and monitoring	DTI/ Experts										
(5) Evaluation	DTI										
< Implementation Phase >											
(1) Project management	DTI										
(2) Promotion of MFIs & existing financial cooperatives											
Seminars for MFIs, cooperatives, LGUs & other stakeholders	DTI/ Experts										
Assist to develop capacity & products for MFIs & cooperatives	Experts										
Facilitate funding/ guarantee	DTI										
(3) Facilitate VC finance	DTI										
(4) Training sessions and assistance to groups of farmers/fishermen/processors and cooperatives											

Activities	Agency	Schedule (Year)																			
		Pilot Phase						Implementation Phase													
		1		2		3		4		5		6		7		8		9		10	
Preparation	DTI/ Experts																				
Trainings sessions and monitoring	DTI/ Experts																				
(5) Evaluation	DTI																				

(6) Estimated Project Cost

Project costs are roughly estimated as follows.

1) Personnel Cost (including accommodation and allowances)

Table 8-191 shows the personnel cost required for the project.

Table 8-191: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Project manager/advisor	7 MM x 3 years	To be determined	To be determined	International expert
Local experts/MF & cooperatives	2 x 24 MM	300,000/MM	14,400,000	Filipino consultants
Local experts/group fund	3 x 18 MM	50,000/MM	2,700,000	Filipino consultants
Total Cost			17,100,000 +	
< Implementation Phase >				
Project manager/advisor	4 MM x 7 years	To be determined	To be determined	International expert
Local experts/MF & cooperatives	2 x 56 MM	300,000/MM	33,600,000	Filipino consultants
Local experts/group fund	5 x 42 MM	50,000/MM	10,500,000	Filipino consultants
Total Cost			44,100,000 +	

2) Facility and Equipment Cost

Table 8-192 shows the equipment cost required for the project. The cost is estimated at Php 2.2 million for pilot phase and Php 0.4 million for implementation phase, based on the assumptions that i) the vehicle to be purchased in the pilot phase will be continued to be utilized in the implementation phase, ii) the production inputs provided to the groups will be repaid by the groups to the project and the repayment rate is expected at 90%.

Table 8-192: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Computer	1	50,000	50,000	
Printer	1	30,000	30,000	
Office stationery	1	50,000	50,000	
Safety boxes	5	1,300	6,500	
Vehicle	2	1,000,000	2,000,000	4 x 4 for DTI
Production Inputs	6	(200,000)	(1,100,000) 100,000	To be repaid by the groups (with 90% repayment rate)
Total Cost			2,236,500	
< Implementation Phase >				
Office stationery	1	100,000	100,000	
Safety boxes	10	1,300	13,000	
Production Inputs	15	(200,000)	(2,700,000) 300,000	To be repaid by the groups (with 90% repayment rate)
Total Cost			413,000	

3) Operational Cost

Table 8-193 shows the operational cost required for the project.

Table 8-193: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Car maintenance	6	50,000	300,000	2 cars x 3 years
Fuel	72	10,000	720,000	2 cars x 12 months x 3 years
Transportation (Air)	1 x 2 x 3	6,000	36,000	Project manager, Manila-Cotabato
Transportation (Air)	1 x 3 x 3, 1 x 1 x 3	19,000	228,000	Expert & project manager, Manila-Sulu/Tawi-Tawi
Transportation	3 x 18	10,000	540,000	For local experts
Communication	125 months	1,000	125,000	For manager & experts
Total Cost			1,949,000	
< Implementation Phase >				
Car maintenance	14	50,000	700,000	2 cars x 7 years
Fuel	168	10,000	1,680,000	2 cars x 12 months x 7 years
Transportation (Air)	1 x 2 x 7	6,000	84,000	Project manager, Manila-Cotabato
Transportation (Air)	1 x 4 x 7, 1 x 1 x 7	19,000	665,000	Expert & project manager, Manila-Tawi-Tawi/Sulu
Transportation	5 x 42 months	10,000	2,100,000	For local experts
Communication	350 months	1,000	350,000	For manager & experts
Total Cost			5,579,000	

4) Training and Seminar Cost

Table 8-194 shows the training and seminar cost required for the project.

Table 8-194: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Consultative meetings	3	100,000	300,000	In Cotabato
Seminars for MFI/cooperatives	2	100,000	200,000	In Cotabato & Zamboanga
Seminar for LGUs, etc.	7	100,000	700,000	In 2 places in Maguindanao & LDS, and 3 provinces
Training sessions for DTI officers and experts	2	30,000	60,000	In Cotabato & Zamboanga for one week
Evaluation meetings	2	10,000	20,000	In Cotabato & Zamboanga
Total Cost			1,220,000	
< Implementation Phase >				
Consultative meetings	7	100,000	700,000	
Seminars for MFI/cooperatives	4	100,000	400,000	In Cotabato & Zamboanga
Seminar for LGUs, etc.	14	100,000	1,400,000	In 2 places in Maguindanao & LDS, and 3 provinces
Training sessions for DTI officers and experts	4	30,000	120,000	In Cotabato & Zamboanga for one week
Evaluation meetings	4	10,000	40,000	In Cotabato & Zamboanga
Total Cost			3,020,000	

(7) Collaboration with Other Projects

Table 8-195 shows the programs and projects by other agencies in the Philippines. It is required for the DTI to collaborate with these agencies to facilitate their assistances to the projects, including funding to MFIs and target groups and capacity buildings for MFIs, cooperatives, and target groups.

Table 8-195: Related Projects and Activities

Name of Relevant Projects	Implementation Agency	Relationship with the Proposed Project Plan
Food Supply Chain Program / Conduit Program	Land Bank	Loans by the bank to cooperatives based on contracts with processors or traders
Agri-Fishery Microfinance Program (Fisheries Financing Program)	ACPC & Land Bank	Loans by the Land Bank under guarantee by ACPC
Agricultural Credit Support Program/Development Advocacy Program	Land Bank	Loans to agri/fishery projects, cooperatives, associations
Sustainable Mari-culture Investment Program & SMED program	DBP	Loans by the DBP to cooperatives
Support programs to cooperatives	MASS-SPECC	Provision of training and fund to cooperatives registered at MASS-PEDC
Guarantee program	Agricultural Guarantee Fund Pool (AGFP)	Guarantees of loans by the financial institutions
Wholesale fund for MFIs and cooperatives	PCFC, NLDC, ACPC, Land Bank	Provision of loan funds to MFIs and cooperatives
Capacity building fund for MFIs	PCFC, NLDC	Build capacity of MFIs, including new product development

8-8 Organizational Strengthening/BDS

Project Title

Development of the Capacity of Producers' Groups in the ARMM

(1) Project Summary

1) Background

In the ARMM, many groups are producing products, especially in primary industries, such as agricultural, fisheries, and livestock products. When they produce these products on an individual basis, they do not need many management skills. However, when they are willing to access markets outside the ARMM or to start processing at a certain scale, they may find that the formation of informal or formal groups gives them many advantages. Managers of these groups usually need management skills, which are to be offered by BDS providers. Considering the difficulty of accessing BDS providers in the ARMM, this action plan designates DTI provincial officers as the main service providers, with assistance from the relevant municipal LGU offices.

In addition, there is the problem that many cooperatives lost their legal status as cooperatives due to failure to reregister after the implementation of R.A.9520[230]. As of the end of May 2011, only around 30 cooperatives had successfully reregistered their status in the ARMM although there were over 6,500 cooperatives before the process of re-registration started. Therefore, these informal producers' groups need technical assistance to register their status under CDA again. According to this study, most cooperatives failed to reregister because of the difficulty in preparing the financial statements required to be validated by accredited auditors. Therefore, the action plan includes assistance to informal producers' groups to register as cooperatives through technical assistance of CDA.

2) Target Areas

This action plan targets five provinces in the ARMM, including Maguindanao, Lanao Del Sur, Basilan, Sulu, and Tawi-Tawi. The project covers two to three selected municipalities in each province.

[230] Republic Act No. 9520 An act amending the cooperative code of the Philippines to be known as the "Philippine Cooperative Code of 2008."

3) Target Groups

During the first phase, the project will target five to six producers' groups in each province. During the second phase, the project will enhance coverage to up to 10 or more producers' groups. The target number is to be determined based on levels of capacity development among trainers during the first phase.

4) Project Period

A total of 10 years is necessary for the overall project. The first phase of this project will be implemented for three years for a whole cycle including the first trial period with raw data gathering for the first year, reviewing modules and follow-up training during the second year, and internal technical transfers in DTI during the third year. Then, the implementation phase will be carried out for the following seven years. After the completion of the first phase, the second, implementation phase will be conducted to enhance BDS activities in further areas of the ARMM.

5) Project Purpose

- To develop the management capacities of producers' groups
- To provide training to potential BDS providers including officers in DTI provinces. If some private institutions, such as chambers of commerce, NGOs, MFIs, and universities can provide BDS, these institutions can be covered as training participants.
- To provide technical assistance for the producers' groups that are willing to be cooperatives for their registration at CDA

6) Expected Outcome

- Producers' groups can maintain accounting records, implement simple and basic marketing activities, and obtain knowledge of group management.
- Targeted DTI officials and staffs at relevant private BDS providers are capacitated through trainers' training.
- DTI can review and improve its BDS training modules.
- Producers' groups can enhance access to private BDS providers.

7) Expected Impact

- Producers' groups will increase their sales volume with higher prices.
- Producers groups will continue their operations in a sustainable manner.
- DTI will be able to sustain service delivery of BDS to producers' groups

8) Involvements of Donor Agencies

The involvements of donor agencies are highly appreciated. This action plan targets the limited subjects of services to train counterparts due to limitation of estimated budgets. Dispatching additional BDS experts by donor agencies may contribute to increasing these subjects, such as, general affairs, promotion of products, business negotiations, and etc. In addition, participation of donors may help in increasing the numbers of producers' groups, which are around 10 in the implementation phase of this current plan. This estimation is made due to the limited number of DTI officers to be trained. However, the Study team already identified the number of private BDS providers, which can enhance coverage areas of BDS services. This action plan already indicates that some of these providers can be involved. If donor agencies can support that these BDS providers take trainers trainings with DTI officers and be provided subsidies to deliver their services to producers' groups, the coverage areas of BDS services will be far enhanced. Therefore, involvements of donor agencies can make the impacts of this action plan be further fruitful.

(2) Activities

1) Preparation

- The project team (to be explained under the Management Plan) will review the DTI training modules. The modules of the BDS training materials, which DTI currently uses, are set as a standard in this project. This project does not intend to create new training modules from scratch, mainly because target officers in DTI provinces are already familiar with these modules through trainings taken in the past. The expected major components of BDS contents under this action plan are accounting, marketing, and group management at basic levels.
- To enhance the coverage areas of BDS services, the project team will approach private service providers, such as chambers of commerce, NGOs, MFIs, and universities. The project team will assess the contents of the BDS training materials of all potential service providers. If their modules do not satisfy the DTI standard, the project team may request these providers to use DTI modules. If these private service providers agree to all the predetermined conditions, DTI will register their entities as accredited BDS service providers. The project office will support bridging these service providers to target groups upon request.
- To boost access to these private service providers, the project team will prepare a list of BDS providers, the provisional title of which is "BDS Yellow Book." This book will cover the basic information of private BDS providers, such as addresses, phone numbers, contact persons, and varieties of services in Mindanao, including the ARMM as well as the rest of

the Philippines. DTI will be in charge of updating the list periodically and publishing and distributing copies to all the LGU offices in the ARMM. Through the training program, this information will be disseminated to producers' groups.

- The project team will select target producers' groups with municipal planning officers. Evaluation and monitoring experts will be assigned in each DTI provincial office to collect and gather information about local producers' groups in coordination with LGUs. CDA will provide data about registered cooperatives as supportive information for selection criteria.

2) Training of trainers at provincial level

- After implementing capacity assessments, DTI trainers at the regional office will provide the necessary training programs to target trainees who are officers at DTI provincial offices.
- For the accredited private service providers that agree to introduce the DTI modules, the project office will require them to participate in an intensive training course. The course aim is for participants to master the contents of the training modules as trainers.

3) Implementation of training sessions to producers' groups

- During a pilot period, each trainer will cover two to three target groups. As a group, the trainers will visit client producers. One will be a model trainer while others observe the model trainer's performance. This allows evaluation and improvements of their performance after training. First, the training programs will prioritize bookkeeping. This is because of the lack of financial statements which is the most serious problem among producers' groups, including cooperatives, according to this study. This component focuses on non-accountants to enhance basic accounting knowledge. Second, these groups will learn the basics of marketing. The marketing training will cover access to local sales channels, access to official prices for target commodities, and basic strategies for negotiations with traders. The trainers will also emphasize the disadvantages of borrowing money from local traders, and recommend that members access formal financial institutions, such as MFIs and banks. Third, the target groups will learn about group management, including leadership training, conflict mitigation, cooperative management, governance, etc.
- After the training, once a month trainers will be required to review their performance to discuss how to improve their services.

4) Reviews of training modules and follow-up trainings for trainers

- After completing the first year, the project team will review the training modules provided by DTI, to tackle issues and concerns. Then, the project team and target trainers will review and revise relevant training modules.

- After revising the training modules, the project office will provide follow-up training to ensure that all target trainers understand the points of modification in the revised modules. In addition, through the analysis of performance in the first-year experience, the project office will conduct follow-up training for these trainers.

5) Technical transfers to other staffs

DTI needs to increase the number of trainers at the provincial level due to insufficient number of trainers for BDS in DTI to cater potential producers' groups. Through the implementation of training sessions during the pilot period, DTI officers will master the training modules and teaching methodologies and will be capable of transferring their skills and knowledge to their colleagues in the office. Since trainers of the first generation will already learn how to observe and improve the performance and skills of their colleague trainers through the pilot period, they should also be able to train these candidate trainers. By accomplishing this internal technical transfer, the pilot period of three years will be completed.

6) Implementation period

After the fourth year, DTI officers will continue the same procedures mentioned above. Accredited private BDS providers will also continue to provide services. The review and revision of DTI training modules will be conducted every three years unless trainers find critical problems to be modified beforehand. The selection of private BDS providers should be reviewed every three years.

7) Technical supports to register under CDA

Through the activities with stakeholders, such as municipal LGUs, CDA provincial offices, etc., the project will support the groups identified that are interested in registering their status. CDA will need to confirm whether these groups have continued business even after they failed their status by checking balance sheets. Then, CDA should check whether these groups understand the advantages of being a cooperative and the responsibilities bonded under R.A. 9520. After confirming these criteria, the project will suggest that CDA hold a technical workshop for these groups to register as cooperatives. This activity should be sustained along with the regular activities of 1) to 6) throughout the whole project period.

8) Evaluation

Before the end of the pilot phase, regional offices and provincial offices of DTI, DILG, CDA, and the major concerned partners formulate the evaluation team. The evaluation team assesses the effects in the pilot phase. It is ideal that following conditions are achieved before the project

proceeds to the implementation phase.

- The team assesses the achievement of expected outputs and project purpose. 80% of these achievements can be one of the rough indications to recommend the project proceeding to the implementation phase.
- The DTI officers master modules and methodologies of BDS trainings.
- The DTI officers can internally transfer their skills and knowledge to their colleagues.

The project design should be appropriately modified based on periodical evaluations during the implementation period. When the evaluation is completed at the end of the pilot stage, the team will determine the timings for evaluations of the implementation phase. It can be roughly estimated after three years and six years from the completion of the pilot period.

(3) Management Plan

The project office will be located in the DTI regional office. The project team will comprise of the regional secretary as project manager of the counterpart and a technical working group composed of officers in the technical department of the regional groups. The regular operation will be managed by the technical working group, and consultants will work closely with this group for technical cooperation. The CDA regional office will assist the project through sharing information about cooperatives, which will be important when the project is selecting good candidates for trainee cooperatives. CDA will also support the informal producers' groups to register under CDA as cooperatives. The DILG regional office will assist the project by instructing municipal LGU offices to coordinate among DTI provincial offices, target producers' groups, and target cooperatives.

DTI provincial offices will receive the initial training program from the project office to confirm the contents of the training program. Municipal LGU offices will gather information about local producers' groups and cooperatives. The project office will share the list of target cooperatives with municipal LGU offices. Municipal LGUs will also coordinate training schedules with target groups and DTI provincial offices. According to the coordination by the municipal LGU, the trainers will provide training programs to the target groups. Target cooperatives will report the results of the training to CDA provincial offices. Periodically, each CDA provincial office will compile the submitted reports for the CDA regional office.

Organization structure of the project is shown in Figure 8-24.

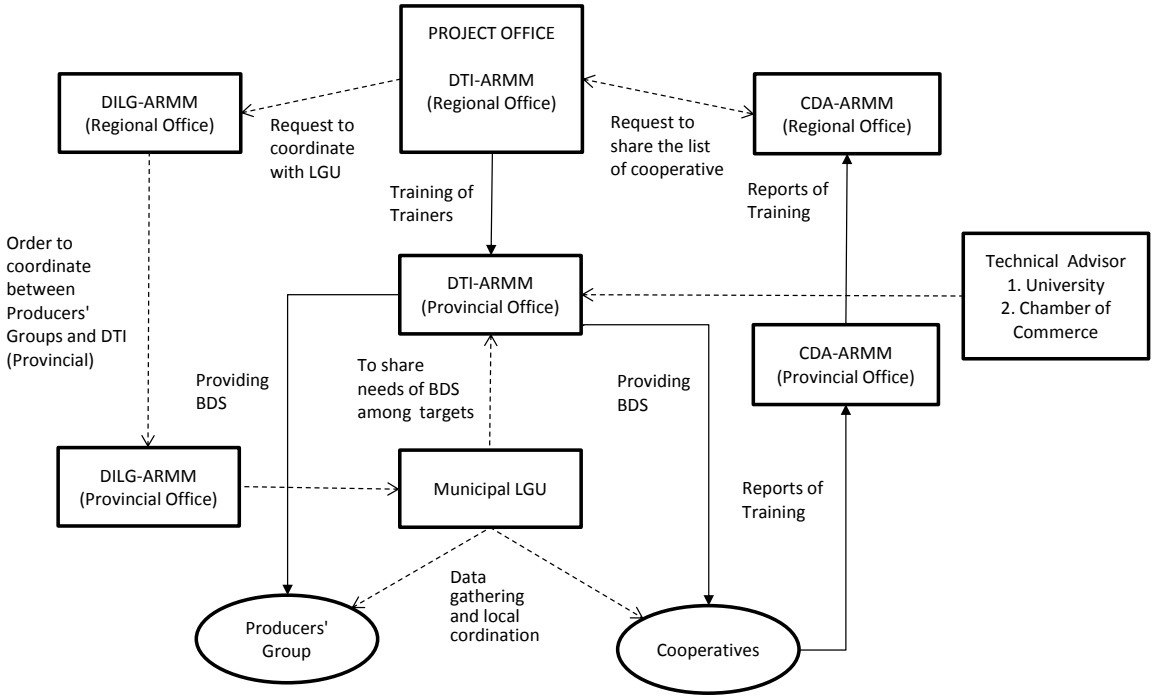


Figure 8-24: Organizational Structure of the Project

(4) Necessary Inputs

Necessary inputs for the project are shown in Tables 8-196 and 8-197.

1) Personnel Plan

Table 8-196: Personnel Plan

Necessary Personnel	Number	Period (MM)	Agency/Organization
Project manager/ Human capacity development	1	8 MM x 10 Years	International Consultant
BDS1: Accounting	1	(Pilot) 6MM x 3 Years (Imple.) 1MM x 7 Years	(Pilot) International Consultant (Imple.) Local Consultant
BDS2: Marketing	1	(Pilot) 6MM x 3 Years (Imple.) 1MM x 7 Years	(Pilot) International Consultant (Imple.) Local Consultant
BDS3: Group Management	1	(Pilot) 6MM x 3 Years (Imple.) 1MM x 7 Years	(Pilot) International Consultant (Imple.) Local Consultant
Monitoring and Evaluation	5	(Pilot) 10MM x 3 years	Local NGOs

2) Equipment Plan

Table 8-197: Equipment Plan

Equipment	Quantity	Specification	Purpose
Computers	3	Desktop computers and monitors	To prepare training schedules and revise training modules
Office stationery	1	Set of stationery item, such as pens, notebooks, envelopes, etc.	To implement the project smoothly
Vehicle	5	4 x 4	Allocate at each DTI provincial office
Copy machine	1	Color, back-to-back printing, PDF functions	To prepare modules of internal training

(5) Plan of Operation

The operation plan of the project is shown in Table 8-198.

Table 8-198: Plan of Operation

Activities	Agency	Schedule (Year)									
		Pilot Phase/Implementation Phase									
		1	2	3	4	5	6	7	8	9	10
First Phase (Pilot)											
(1) Preparation		■									
(2) Training of trainers at provincial level		■	■	■	■						
(3) Implementation of trainings to producers' groups				■	■	■	■				
(4) Reviews of trainings modules and follow-up trainings				■							
(5) Technical transfers to other staffs						■	■				
(7) Technical support to register under CDA*		■	■	■	■	■	■				
(8) Evaluation							■				
Second Phase (Implementation)											
(3) Implementation of trainings to producers' groups							■	■	■	■	■	■	■	■	■	■	■	■	■
(4) Reviews of trainings modules and follow-up trainings									■					■					
(5) Technical transfers to other staffs							■		■		■		■	■		■		■	
(7) Technical support to register under CDA*							■	■	■	■	■	■	■	■	■	■	■	■	■

* "(7) Technical support to register under CDA" is a regular monitoring activity. Therefore, this activity does not require intensive input to sustain.

(6) Estimated Project Cost

Project costs estimated are shown in Tables 8-199 to 8-202.

1) Personnel Cost

Table 8-199: Personnel Cost

Expertise	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Project manager/ Human capacity development	1 expert x 8 MM x 3 years	To be determined		International consultant
BDS1: Accounting	1 expert x 6 MM x 3 years	To be determined		International consultant
BDS2: Marketing	1 expert x 6 MM x 3 years	To be determined		International consultant
BDS3: Group Management	1 expert x 6 MM x 3 years	To be determined		International consultant
Monitoring and evaluation	5 experts x 10 MM x 3 years	20,000/MM	3,000,000	Local NGOs
< Implementation Phase >				
Project manager/ Human capacity development	1 expert x 8 MM x 7 years	To be determined		International consultant
BDS1: Accounting	1 expert x 1 MM x 7 years	100,000/MM	700,000	Filipino consultant
BDS2: Marketing	1 expert x 1 MM x 7 years	100,000/MM	700,000	Filipino consultant
BDS3: Group management	1 expert x 1 MM x 7 years	100,000/MM	700,000	Filipino consultant
Total Cost				

2) Facility and Equipment Cost

Table 8-200: Facility and Equipment Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase for 3 Years>				
Computers	3	50,000	150,000	
Office stationery	3	100,000	300,000	Unit cost is annual budget
Vehicle	5	1,000,000	5,000,000	
Copy machine	1	500,000	500,000	
Total Cost			5,950,000	
< Implementation Phase for 7 Years >				
Office stationery	35	100,000	3,500,000	
Total Cost			3,500,000	

3) Operational Cost (including counterpart cost)

Table 8-201: Operational Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Car Maintenance	15	50,000	750,000	5 cars x 3 years
Fuel	180	10,000	1,800,000	5 cars x 12 months x 3 years
Miscellaneous	216	10,000	2,160,000	Office maintenance 6 offices x 12 months x 3 years
Total Cost			4,710,000	
< Implementation Phase >				
Car Maintenance	35	100,000	3,500,000	5 cars x 7 years
Fuel	420	10,000	4,200,000	5 cars x 12 months x 7 years
Miscellaneous	504	10,000	5,040,000	Office maintenance 6 offices x 12 months x 7 years
Total Cost			12,740,000	

4) Training and Seminar Cost

Table 8-202: Training and Seminar Cost

Main Items	Quantity	Unit Cost (Php)	Cost (Php)	Remarks
< Pilot Phase >				
Preparatory training	1	300,000	300,000	At the beginning, coordinate all the participants
Module reviewing workshop	2	300,000	600,000	To review and revise the training modules
Follow-up training	3	300,000	900,000	To conduct follow-up training sessions with DTI officers
Total Cost			1,800,000	
< Implementation Phase >				
Module reviewing workshop	2	300,000	600,000	
Follow-up training	7	300,000	2,100,000	
Total Cost			2,700,000	

(7) Collaboration with Other Projects

Table 8-203: Related Projects and Activities

Name of Relevant Project	Agency	Relationship with the Proposed Project Plan
Human Capacity Development Project	JICA	Sharing data on counterpart organization, sharing training methodologies