

**Chapter6**

**ARC Development Plan**

## **Chapter 6 ARC Development Plan**

### **6.1 Agriculture Development Scheme**

#### **6.1.1 Agriculture Development Plan**

As the target ARCs are scattered within Isabela Province, the natural conditions differ. Also, the agricultural infrastructures like irrigation system and road differ. Therefore, agriculture should be developed not in a uniform manner, but in different ways according to the location, the natural conditions and the infrastructures covering the target ARCs. It is, however, possible to divide the ARCs into groups with similar conditions. The 21 ARCs are divided into three (3) groups, Prime ARCs, Developing ARCs and Marginal ARCs to formulate development plan. Agricultural development is outlined in Table 6.1.1.

The Prime ARCs located at the plain with irrigation system are eight as Quiling, San Miguel, Amulungan-Rizal, Luzon, Canan, Bantug Petines, San Miguel Burgos and San Ramon. In this group, rice growing will be the center of cropping plan with a viewpoint of supplying the staple food in a stable manner. Rice production shall be increased through prevention of disease, extension of hybrid rice and introduction of mungbean. The support required would be extension of farm technologies and strengthening of farmers' organization.

The core of development plan in the 'Developing ARCs' located at the river terraces or at the mixture of the plain and small hills, is crop diversification from corn to vegetables, fruit trees, flowers and useful trees. The natural conditions and distance to the market are the basis for selection of crops for diversification. A specific crop shall be grown in an ARC to win the prominence of the crop in the future. The 'Developing ARCs' consist of eleven (11) ARCs as Lapogan, San Manuel, Minagbag, Cabaruan, Capirpiriwan, Fermeldy, Yeban Norte, Andarayan, Dalena & Simanu, Dammao, and Viola Estate Cluster. Sloping agriculture technology shall be applied at the slope to prevent soil erosion. As new crops are introduced to the ARCs in this plan, this would require technologies of growing these new crops in addition to raising seedlings of perennials, improved farm management, strengthening of farmers' organization for marketing, and capita support at the initial stage

Since six (6) ARCs among the 'Developing ARCs' have good water source, rice will be grown twice a year with construction of new irrigation system. When the irrigation system is completed, the development of these ARCs will consider plan for the 'Prime ARCs'. These include Lapogan (planned irrigation 325 ha), Minagbag (45 ha), Andarayan (340 ha) and Dammao (94 ha). To achieve this plan, it is necessary to establish and manage farmers' organization (irrigators association), and to disseminate farming technologies on irrigation and water management. On the other hand, the irrigated area will be merely a small part of ARC like Cabaruan (planned irrigation 200 ha) and Capirpiriwan (140 ha), though

the irrigation system is completed. The development plan for the 'Developing ARCs' will be applied to these ARCs.

Since soil erosion is in progress at the slope in the 'Remote ARCs', it is important to apply technologies on sloping agriculture to prevent soil erosion as mentioned above. ARCs in the 'Remote ARCs' are La Suerte, DEPASIVI and CENEA Clusters in Isabela Settlement and Progreso. Agricultural development plan focuses on sloping agriculture, crop diversification and livestock development in this group. The development plan requires agricultural extension services and support, capacity building and training on farm management, strengthening of farmers' organization for marketing, capital support for initial investment, and construction of rural roads in order to succeed in the implementation.

The farm products will be sold mainly to the local markets in the ARCs, big towns as Ilagan, Cauayan, Roxas and Santiago City in Isabela Province and Tuguegarao in the neighboring Cagayan Province. Rice and corn, however, have established market in the capital metropolis. The farm products from crop diversification will be sold mainly to the local markets, the neighboring towns and the capital metropolis as well. It is possible that they will be exported to neighboring countries through 'Cagayan Special Economic Zone and Freeport'.<sup>1</sup>

#### (1) Rice Growing Plan

Rice is the most important crop as it is the staple food and economically. Therefore, the paddy fields will not be turned into anything else in the ARCs in this development plan. It is urgent issue to protect rice plant from RTV disease to improve the rice yield, because it causes serious damage at many ARCs. RCPC has established the prevention of the disease, however, the method has not been disseminated to farmers well. So the issue requires technical instruction on the control to farmers through agricultural extension workers with support of RCPC. Mungbean shall be added to the present crop rotation after the dry season crop to improve soil fertility and to increase income. Planting mungbean is targeted at about one third (1/3) of the paddy fields in the Prime ARCs. The crop rotation will be 

paddy	paddy	mungbean
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 in a year. The wet season paddy will be planted at the same month as it is now because of timing of water supply through irrigation. But the dry season paddy shall be planted in November instead of the present December, about a month earlier to include mungbean in the rotation. This will promote a uniform timing of paddy planting which is one of the remedies to suppress proliferation of the intermediate host of RTV disease. Agricultural extension workers will introduce Mungbean and the seeds will be supplied with reasonable price by CVIARC. (refer to Tables C.2.1,

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<sup>1</sup> The special economic zone is planned at the northernmost Luzon and a part of the processing zone will start its operation in 2002 according to Cagayan Economic Zone Authority (CEZA). The Study Area has advantage in distance for transportation of farm products because it is located near from the planned zone.

C.2.3 and C.2.4 in Appendix C)

## (2) Crop Diversification Plan

Corn is used mainly as a feed for animals, though white corn is used as a substitute of rice sometimes where rice is not produced. Though corn has a stable market, farmers sometimes lose money from corn growing due to low yields and low prices. Corn will be diversified into more highly valued crops, such as vegetables, fruit trees, flowers, forest trees, etc. The target is set at 20 % of the cornfields. Crop diversification will be promoted in the groups of Developing ARCs and Remote ARCs.

The selected crops will vary from ARC according to soils, topographical conditions and distance to market. Vegetables shall be chosen mainly at the river terraces and at the areas near the market. A combination of rotation as corn-vegetables or vegetables-corn will be practiced. Fruit trees and profitable forest trees shall be selected at the slope of hills to protect soil from erosion and to get higher profit. Flowers shall be selected in ARCs that are near the highway and have a complex topography. Crops selected for diversification are found in Isabela Province, which can grow under the natural conditions. Each ARC shall be planned to have special crops to sell in market with its name in the future like 'Chinese cabbage in Benguet'. Diversified crops in each ARC are described in the paragraph 6.6 ARC Development Plan.

Agricultural extension workers will provide farming methods necessary to crop diversification to the farmers who hope to turn corn into more highly valued crops at the demonstration farms. Sloping agriculture will be instructed together with crop diversification. Crop diversification plan requires technical support by CVIARC, which conducts training to the agricultural extension workers at the center. The center staff should visit also the ARCs once in a while to provide instructions on key points to the farmers. Seedlings necessary for crop diversification is described in the paragraph of community plant nursery. (refer to Table C.2.2 in Appendix C)

## (3) Sloping Agriculture

Farming is carried out in the same manner at present whether the land is flat or sloping. It induces soil erosion at the slope, particularly at the corn growing fields. It is necessary to take special consideration of farming at the slope such as contour planting, natural vegetative strips or alley cropping which have been recommended by Bureau of Soils and Water Management, DA. Which method is applied among the three (3) methods mentioned above depends on selected crops and the degree of slope. The contour planting may be applied to any crops. The vegetative strips are good for perennial crops as fruit trees and forest trees. The alley cropping is to plant perennial crops and annual crops in a row. It requires strong instruction for farmers to practice the sloping agriculture.

The officials of Soils and Water Management and extension workers will provide training on sloping agriculture. This will be disseminated to the farmers together with crop diversification. Those who do not diversify crops will learn the technology through the farmers with crop diversification. The ARCs that need sloping agriculture are in the groups of Mixture of Flat & Hilly and Almost Hilly. This technology contributes much to environmental conservation. (refer to Table C.2.4 in Appendix C)

#### (4) Community Plant Nursery Development

It is the requisite to supply farmers with cheap planting materials of good quality in order to promote crop diversification. Vegetable seed shall be provided with reasonable price by DA or the certified seed producers. A community plant nursery shall be set up to produce planting materials of fruit trees, flowers and forest trees. The most important point is to collect good quality mother trees (varieties) identified by DA. The nurseries are planned in nine (9) ARCs or clusters as San Manuel, La Suerte Cluster, DEPASIVI Cluster, CENEA Cluster, Minagbag, Capirpiriwan, Progreso, Yeban Norte and Viola Estate Cluster. There exists a private nursery in Cabaruan ARC, which may work for the crop diversification in the ARC.

It requires special skills and knowledge to establish a plant nursery. CVIARC will give a technical guidance to the ARCs and extension workers shall follow it up. And forest trees are included in the diversification plan, therefore, the nursery needs the technical support and guidance by the Provincial Environment and Natural Resources Office (PENRO). Plant nursery requires special skills of seeding, cutting, budding, grafting, etc. for propagation by CVIARC as well. Seedlings grown at the nursery will be sold to farmers at reasonable prices the amount of which shall be used to shoulder wages and maintenance cost. (refer to Table C.2.4 in Appendix C)

#### (5) Livestock Development Plan

Livestock is kept in a small scale in the ARCs. The small-scale animal husbandry is planned for most of ARCS in the Livelihood Development Plan. But the ARBs are allocated wider land in Isabela Settlement ARC, 4.3 ha on average compared to 2.1 ha on average in the other. There are 21.5 % of farmers holding more than seven (7) ha and the land remains unused. The unused land will be used as pasture.

Therefore, cattle raising are planned in the three (3) clusters of Isabela Settlement. In the plan, a farmer will raise five (5) heads at the beginning due to less capacity to acquire loan. The plan is to raise a total of 50 heads of cattle in an ARC. The plan shall be applied to Progreso as well as in ARCs located in remote areas. The cattle raised will be Australian Braman recommended by DA. Gramineous Nepia grass and Buracaria and Leguminous Arakish will be planted as forage, and corn will be used as well. It is calculated that one hectare will feed five (5) heads of cattle. The plan needs good

quality carves which are supplied by Cagayan Valley Upland Crop Research Outreach Station (CVUPROS). Provincial Veterinary Office will give training on cattle raising, animal disease protection, inoculation and artificial insemination. (refer to Table C.2.4 in Appendix C)

#### (6) Intensification of Agricultural Extension Services

The technical officers on agriculture in the province and municipalities (MA, TA) who are extension workers should be equipped well with the necessary technologies to promote the above mentioned agricultural development plans. The various research centers and the relevant offices should hold periodical meetings and deliver technical reports to disseminate technology on the newest technical information with the extension workers. To build capacity of extension workers, they will be trained at the research centers and relevant offices with the project budget for the first two years as follows:

Training	Research centers & Relevant. offices	Year of training
RTV disease protection	RCPC	First year
Introduction of hybrid rice and mungbean	PhilRice, San Mateo	First year
IPM & INM	RCPC	First year
Plant nursery establishment and plant propagation	CVIARC	First year
Crop diversification (vegetables, fruit trees, flowers, trees)	CVIARC	Second year
Soil conservation at the slope	Soil & Water Management Office	Second year
Animal raising	Veterinary Office	Second year
Food processing	DOST	Second year

It is not easy for extension workers to go to ARCs often because of poor traffic conditions. It is one of big factors, which induces inactive extension services. It is planned to provide motorbike to each municipal agricultural office to improve mobility of extension workers in order to heighten the frequency of visit to farmers. (refer to Table C.2.4 in Appendix C)

#### (7) Food Processing Plan

A small scale food processing is planned to add value to farm products, generate job opportunity and increase farmers' income. Simple food processing is planned in Livelihood Development Plan. Though the food processing is a small scale, the program requires food processing machines, equipment and facilities. As it is difficult to borrow the capital to start with an individual or a group, agricultural cooperatives and the 'Isabela Trading Company (ITC)' described later in the rural finance plan shall operate the food-processing factory. Technical guidance and support shall be rendered to the bodies who will set up the food processing plants such as, the provincial office,

Department of Science and Technology, etc. In case technical problems occur, Food and Nutrition Research Institute (FNRI) under the department shall help the bodies in solving them. As agricultural cooperatives are not well matured and the ITC is yet to establish, the food-processing plan shall be realized at the later stage of development. (refer to Table C.2.4 in Appendix C)

#### (8) Development Concept in Agricultural Development Plan

The Agricultural development plan concept that will be implemented on this project is, 'Fair', 'Share' and 'Care', and the development effect shall benefit not only the rich farmers, taking the following points into consideration:

- RTV disease control and mungbean introduction shall be dispersed to all the rice growers and shall not exclude any particular farmers.
- Rice growers who want to introduce hybrid rice shall be listed and the seed shall be delivered fairly by the Barangay council. The poor farmers shall be given an official loan preferentially and shall be supported by the cooperative.
- The farm owned by the poor shall be used preferentially as a demo-farm in IPM and INM training.
- The farm owned by the poor among farmers who want to diversify crops should be used preferentially as a demo-farm in crop diversification. In order to hedge risks for the poor, adjacent plural farms shall be selected as a demo-farm. The method is expected to be the most effective in dispersal of crop diversification to all the farmers.
- Labors necessary in the community plant nursery shall be selected from the poor.
- When farmers expecting to buy seedlings are more than the produced seedlings, they shall be sold to the weak poor with priority.
- Sloping agriculture shall be dispersed to the poor preferentially because the poor farmers are more affected economically with decreased yield from soil erosion.
- In livestock development, even the poor farmers shall be able to participate with the support by official loan of cooperative if they so desire.

### **6.1.2 Irrigation Development Plan**

#### (1) Basic Idea of Irrigation Development

Judging from the fact that the ARCs, located in the existing irrigation services areas in the Province, belong to the prime area, the irrigation development gives a big impact on the ARC development. As the irrigation development presupposes availability of irrigation water resources inside or near the ARC, the number of the ARCs with the possibility of irrigation development will be limited.

**Table 6.1.1 Outline of Agriculture Development Plan**

**Concept of Agriculture Development Plan**

**Prime ARCs:** Base to supply rice outside of the region

**Developing ARCs:** Base to supply food within and outside of the region

(Including supply of materials to Cagayan Special Economic Zone, Free Port)

**Remote ARCs:** Stabilization of self-sufficing economy and transition to the developing ARCs

**Outline of Development Plan by the group of ARCs and by the stages of development**

Group of ARCs	Topography Agr. infrastructure	Development Plan	Development Target		
			Short-term (1-5 years)	Medium-term (6-10 years)	Long-term (11-20 years)
<b>Prime ARCs</b>	Almost flat With irrigation system	Increased rice yield	RTV disease control Hybrid rice seed production Hybrid rice extension (5% of the irrigated paddy)	Hybrid rice extension (10% of the irrigated paddy) Introduction of mung bean (1/3 of the irrigated paddy)	Hybrid rice extension (25% of the irrigated paddy) Introduction of mung bean (1/3 of the irrigated paddy)
		Improved soil fertility	Introduction of mung bean (1/3 of the irrigated paddy)		
		Corn production Crop diversification	Training of IPM & INM Mainly by vegetables (5% of the present cornfield)	Mainly by vegetables (10% of the present cornfield)	Mainly by vegetables (20% of the present cornfield)
<b>Developing ARCs</b>	Mixture of flat and hilly Irrigation dev. plan	Corn production Crop diversification	Training of IPM & INM By vegetables and fruit trees (5% of the present cornfield)	By vegetables and fruit trees (10% of the present cornfield)	By vegetables and fruit trees (20% of the present cornfield) Intro. of hybrid rice and mung
		Increased rice yield			
		Corn production Crop diversification	Training of IPM & INM Mainly by fruit trees (Plant nursery, seedling pro.)	Mainly by fruit trees (10% of the present cornfield) Sloping agriculture	Mainly by fruit trees (20% of the present cornfield) Sloping agriculture
<b>Remote ARCs</b>	Almost hilly	Soil conservation			
		Corn, Banana production Crop diversification	IPM & INM, Ext. of banana By fruit and useful trees (Plant nursery, seedling pro.)	By fruit and useful trees (10% of the present cornfield)	By fruit and useful trees (20% of the present cornfield) Special crop production Sloping agriculture Cattle raising (200 heads) 10 heads/farmer x 20 Fodder growing(40ha)
		Soil conservation Livestock development	Cattle raising (50 heads) 5 heads/farmer x 10 Fodder growing(10ha/cluster)	Sloping agriculture Cattle raising (100 heads) 10 heads/farmer x 10 Fodder growing(20ha)	



Table 6-1-2 Proposed Yield and Production by ARC/Cluster

No.	ARCs	Farm land	Wet Season						Dry Season						Additional mung b.		Diversified Crops		Other
			Rice			Corn			Rice			Corn			Area	Crops	Area	Crops	
			Area	Yield cav/ha	Product. cavans	Area	Yield cav/ha	Product. cavans	Area	Yield cav/ha	Product. cavans	Area	Yield cav/ha	Product. cavans					
1	Lapogan	894	325	120	39,000	110	80	8,800	325	120	39,000	110	80	8,800	100	fruit	46	ha	339
2	Quiling	229	151	120	18,120	57	80	4,560	151	120	18,120	57	80	4,560	50	vegetables	12	ha	6
4	San Manuel	749	300	88	26,400	300	80	24,000	230	100	23,000	300	80	24,000	0	fruit	100	ha	49
5	San Miguel (Ramon)	436	327	120	39,240	60	80	4,800	327	120	39,240	60	80	4,800	100	vegetables	16	ha	29
6	Amulungan-Rizal	310	305	120	36,600	0	0	0	305	120	36,600	0	0	0	100	vegetables	0	ha	5
7	Isabela Settlement																		
7-1	La Suerte Cluster	1,103	193	80	15,440	700	70	49,000	179	80	14,320	700	70	49,000	0	fruit & tree	182	ha	128
7-2	Dipasivi Cluster	1,172	92	80	7,360	390	70	27,300	72	80	5,760	390	70	27,300	0	fruit & tree	99	ha	591
7-3	Cenea Cluster	1,568	211	80	16,880	620	70	43,400	123	80	9,840	620	70	43,400	0	fruit & tree	158	ha	579
8	Minagbag	909	512	120	61,440	312	80	24,960	435	120	52,200	312	80	24,960	145	fruit & tree	77	ha	1,630
9	Cabaruan	513	183	95	17,385	256	80	20,480	153	100	15,300	256	80	20,480	0	fruit & tree	64	ha	10
10	Capiririvan	370	102	100	10,200	143	80	11,440	102	100	10,200	143	80	11,440	0	fruit, flower	36	ha	89
11	Ferneldy	311	0	0	0	245	80	19,600	0	0	0	245	80	19,600	47	vege. fruit	61	ha	5
12	Luzon	462	415	120	49,800	21	80	1,680	415	120	49,800	21	80	1,680	140	vegetables	7	ha	19
13	Progreso	284	87	60	5,220	109	70	7,630	87	60	5,220	109	70	7,630	0	fruit & tree	28	ha	60
14	Yeban Norte/Sur	1,103	116	88	10,208	750	80	60,000	48	100	4,800	750	80	60,000	0	fruit & tree	186	ha	51
15	Canan	696	678	120	81,360	0	0	0	678	120	81,360	0	0	0	226		0	ha	18
16	Andarayan	353	315	120	37,800	12	80	960	315	120	37,800	12	80	960	105	vegetables	3	ha	23
17	Bantug Petines	450	444	120	53,280	0	0	0	444	120	53,280	0	0	0	150		0	ha	6
18	Dalena & Shimanu	1,035	411	100	41,100	480	80	38,400	287	100	28,700	480	80	38,400	0	tree, fr., ve	120	ha	24
19	Damiao	171	167	100	16,700	0	0	0	167	100	16,700	0	0	0	56		0	ha	4
20	San Miguel (Burgos)	596	260	80	20,800	260	80	20,800	56	100	5,600	260	80	20,800	87	fruit, vege	68	ha	8
21	San Ramon	225	135	120	16,200	67	80	5,360	135	120	16,200	67	80	5,360	45	fruit. vege	20	ha	3
22	Viola Estate Cluster	993	0	0	0	785	80	62,800	0	0	0	785	80	62,800	260	fruit, vege	197	ha	11
		14,932	5,729	620,533	5,677	435,970	5,034	563,040	5,677	1,611	435,970	1,480	3,687						

Product. Total 1,183,573 871,940

For the improvement of the agricultural productivity through irrigation, the farmers should be shouldered and required costs sharing to training and improvement of farm management technology, necessary cost to manage the IA, and the project cost and O&M costs as well as labor services. As presented above, increase of crop production by introduction of irrigation cannot be achieved by irrigation development alone. However, introduction of irrigation is one of the important factors for the increase of farm income. Also, irrigated farmland would give the farmers freedom to select crops and enables future crop diversification.

With respect to the communal irrigation system in the Philippines, inactive IAs or low collection rate of water charges are observed in the areas where irrigation in the dry season is not practiced sufficiently. Farmers have to pay water charges if they receive irrigation water, but they refuse to pay if they do not receive irrigation water at the required time. The irrigation canals with no water flow in the dry season tend to poorly maintenance of the system, which eventually leads to easily collapse the system. Therefore, in this study, development plans would be established for the areas having water resources, which enable irrigation during the dry season.

Based on the above, the first priority in the irrigation development is given to gravity irrigation system, which requires relatively low O&M costs and easy control. However, even if gravity irrigation is not possible, but there is a stable water resource nearby and the farmers' desire is strong, the area is regarded with high potentials and will be integrated in the development plan.

## (2) Objectives and Effects of Irrigation Development

The objective of the irrigation development projects is the increase of palay production by the irrigated paddy farming. In the Study Area, paddy cultivation is practiced in the irrigated paddy fields where they have the irrigation facilities. Also, paddy cultivation or corn cultivation is practiced where there is no irrigation facilities. The average yield of irrigated paddy is 97 cavans/ha, which is 2.6 times bigger than the average yield of 39 cavans/ha in the rainfed paddy. Thus, one can expect a big production increase of paddy production in the irrigated fields.

The effect of irrigation can be expected as follows, taking an example of conversion from corn cultivation to paddy cultivation. A corn farmer with a 2.1 ha land would get a gross income of 54,600 pesos on one corn cropping on the condition of 80 cavans/ha and the price of 6.5 pesos/kg. Assuming a net income ratio of 55 %, the net income will be 30,030 pesos. Under paddy cultivation, this farmer would earn a gross income of 84,000 pesos on the basis of yield of 100 cavans/ha and the price of palay at 8.0 pesos/kg. Using a net income ratio of 60 %, the net income will be 50,400 pesos. Therefore, the increase of gross income with one crop would be 29,400 pesos (net income increase of 20,370 pesos). Farm households practicing two (2) cropping a year would have a gross income increase of 58,800 pesos. For farmlands in the presently undeveloped area, a gross income of 84,000 pesos from one crop farming

and 168,000 pesos if two crops per year, could be expected. With a net income ratio of 60 %, the net income will be 100,800 pesos. Further, aquaculture of Tilapia becomes possible by utilization of the reservoir. Adding the benefit from this, the total benefit can be expected to grow furthermore.

### (3) Irrigation Development Plan

For irrigation planning, the gravity irrigation system shall be given preference since operation and maintenance is easy and cheaper. However, if there is no reliable water resource in the vicinity, which would make gravity irrigation possible, but there is a stable water resource like the Cagayan River (with the intake possibility of irrigation water), the pump irrigation shall be planned. On the other hand, utilization of groundwater is practiced through small pumps on a private basis. As large-scale extraction of groundwater may have effect on the environment such as ground settlement, groundwater will not be taken into consideration as water source. As this area has the Cagayan River nearby as a stable water resource all year round, the pump irrigation plan is adopted because of easy water intake. Rehabilitation works of the irrigation canals of the existing systems as well as construction of new canal system is included in the irrigation development plan. The outline of the Project is shown below.

**Table 6-1-3 List of Irrigation Development Plans**

<u>Name of ARC</u>	<u>Name of Irrigation Project</u>	<u>New or Rehab.</u>	<u>Water Resource</u>	<u>Beneficiary Area in ARC</u>	<u>Planned Total Canal Length</u>
1 Lapogan	Lapogan Communal Pump Irrigation Project	New	Cagayan River	325 ha	3.2 km
5 San Miguel	Construction of New Sub-lateral Canal on MRIIS	Rehab.	MRIIS Lateral Canal	100 ha	2.8 km
6 Amulungan Rizal	Rehabilitation of Weir on Drainage Canal for Water Re-use	Rehab.	MRIIS Drainage Canal	50 ha	-
8 Minagbag	Padapad Communal Irrigation Project	New	Padapad Creek Small Pump Reservoir	45 ha	6.2 km
9 Cabaruan	Caunayan Communal Irrigation Project	New	Caunayan Canal Small Reservoir	200 ha	17.6 km
10 Capirpirwan	Capirpirwan Communal Irrigation Project	New	Ilot Creek	140 ha	4.0 km
16 Andarayan	Andarayan Communal Pump Irrigation Project	New	Cagayan River	340 ha	17.0 km
18 Dalena & Simanu	Rehabilitation of Simanu Communal Irrigation System	Rehab.	Simanu River	186 ha	5.8 km
19 Dammao	Dammao Communal Pump Irrigation Project	New	Cagayan River	800 ha	5.0 km

### (4) Rough Estimate of Amounts of Farmers' Contribution to Development Cost

The case of Lapogan ARC is taken as a model for the pump irrigation. The irrigation being 325 ha and the total project cost being about 4.0 million pesos, the annual repayment amount would be 2,460 pesos on the conditions that repayment of the construction cost is planned to be made by the beneficiaries within the maximum of 50 years with no interest. Therefore, the total annual repayment amount is 5,116 pesos for an average farming household (2.1 ha farming area). The increased net profit of crops (increased net increase of income) is 40,740 pesos. The income repayment rate with respect to the net annual income becomes 12.6 %. The O&M costs of the pump irrigation area in the vicinity is 8 cavans/ha per crop. When this value is converted into the cost, it means that the farmers' sharing amounts to 6,720 pesos/crop or 13,440 pesos per household a year. The ratio of the total contribution of farmers is 18,556 pesos, which is the sum of the amount of repayment and the O&M costs with respect to the increased net income is 42.4 %, and the ratio with respect to the total annual net income (90,720 pesos) becomes 20.5 %.

#### (5) Operation and Maintenance Plan

Under the present system of NIA, the irrigation facilities intended for the area smaller than 1,000 ha are classified under CIS. Therefore, O&M works is taken charge of by the IA composed of beneficiaries. When construction of CIP is approved, the Institutional Development & Operation & Maintenance (IDO-O&M) of the NIA-PIO visits the service area at about half year before the commencement of the construction works and helps establish IA. The IA selects a chairman, a secretary, an accountant, an auditor and 3 to 5 Board of Directors (BOD). Until the beginning of the construction works, the PIO-IDO continues to train these directors on the activities expected of IA during and after construction. During the training period, the representatives of IA and the farmers themselves shall promote the project in cooperation with the engineers of NIA by participating actively in the establishment of the irrigation planning and construction planning and contributing to the realization of the facilities desired by the beneficiaries. The main activities to be performed by IA at each stage of "before construction", "during construction", and "after completion of construction" are as follows;

- Before construction: Attendance at the tender opening
- During construction: Assurance of equality, communication with the responsible people of construction (contractor) such as procurement of labor and record taking of construction cost (in collaboration with NIA)
- After completion of construction: Establishment of cropping pattern in cooperation with DA-MAO, operation and maintenance of the facilities, water distribution, settlement of disputes, collection of the water charge and repayment to NIA.

The operation and maintenance of the canals shall be taken cared of by IA. In case of rehabilitation works of big facilities such as the pumps or incidence of unexpected damages to the irrigation facilities due to disasters, NIA shall render technical assistance or pay part of the cost. The farmers' contribution to the normal operation and maintenance cost varies between 2.5 and 5 cavans/ha

and in case of pump irrigation between 8 and 10 cavans/ha.

#### (6) Development Concept for Irrigation Development Plans

The development concept in the irrigation development consists of “fairness”, “equitability” and “mutual consideration”. To secure this concept the following points are to be borne in mind.

- a) Propose an rotational irrigation system for easy distribution of water. To distribute water equitably, the consent of all beneficiaries shall be obtained about the resolution on the distribution schedule in the general assembly of IA held before planting (before the start of irrigation). NIA officials or DF shall attend the general assembly and confirm whether the discussions are carried out in a fair way. A clause shall be included in IA regulations to strictly adhere to the water distribution schedule.
- b) For the facilities planning, participation of as many farmers as possible shall be encouraged beforehand. Due consideration shall be given to small landowners whose lands are used for common use for the facilities so that they are not disadvantaged. This can be realized as follows in a practical way. When planned canals run through the lands of the small landowners, route change could be considered and minimize the land appropriation of such small landowners. The expropriated lands could be compensated not only by money but also by replacement lands. Such lands could be obtained from the public lands.
- c) To deal with non-payment of water charges, clear stipulations shall be incorporated in the IA regulation and/or rule, such as stoppage of water delivery, forced collection (by placing part of the land under IA control and levying the harvest), etc.
- d) The penalty clause shall be incorporated in IA regulation for non-payment of the contribution to the construction cost.
- e) Enforcement of IA regulation and/or rule is the responsibility of the directors of IA. In order that the regulation is enforced in an equitable way, major violations are to be reported in the general assembly of the beneficiaries. NIA officials or DF shall participate in such assemblies for confirmation of equitable reports.
- f) For collectors of water charges such farmers are to be employed whose expropriated lands are large. Collectors are paid incentives for their job depending on rate of collection.

### **6.1.3 Post-Harvest Facility Development Plan**

#### (1) Basic Idea of Post Harvest Facility Development Plan

As the crop production especially the palay and corn increases because of promotion of the agricultural development plan, the vitality of the cooperatives will be higher through the proposed Farmers' Organization Development Plan. The post harvest facilities development plan like the multi-purpose solar dryer is to be managed by Barangay and the warehouse to be operated and maintained by the MPCFI. The solar dryer is the traditional method adopted by the farmers. As it does not use any machine, it is inexpensive and simple, but it requires large spaces. The warehouses to be operated and

controlled by the cooperatives shall be equipped with solar dryers and cereal drying machines. The multi-purpose drying yards are to be managed by Barangay and can be used equally by all the farmers, and by adhering strictly to the established utilization programs “equality” of use can be expected. The Barangay shall create a utilization schedule of the multi purpose solar in accordance with the expected harvesting time of each farmer, thus securing the equality. As the effect of the multi purpose solar dryer is perceived immediately after its completion, its introduction shall be planned at an early stage. However, as the warehouses are to be managed by MPCIs, they shall be introduced when MPCIs are strengthened and their vitalities are upgraded as described in other paragraphs.

## (2) Purposes and Effects of Post Harvest Facilities

The purpose of the drying facilities is to prevent the low quality of the farm produces by drying as soon as possible after harvesting, and to enable long storage. Thus, dried drains can be sold at a higher price, which means the farmers can avoid having to sell at a lower price. As a result, farmers can control the sale timing for making it possible to increase farm income.

In the case of solar dryers, the difference in prices of the undried and dried palay is 2.0 pesos/kg. It means an increase of gross income of 21,000 pesos per crop for an average farm household (2.1 ha, 100 cavans/ha of yeild of palay) can be expected compared to the undried palay.

The warehouse is a facility with which adjustment of selling time is possible until the sale price is high. Drying is performed to produce high-quality grains by a solar dryer during fine weathers and by a mechanical dryer on rainy days. The drying cost by a mechanical dryer will be 4,200 pesos under the above conditions, taking into consideration the present drying fee of palay of 1,800 pesos per 90 cavans. If farmers are able to sell the dried palay at a price 0.5 pesos/kg higher than that at present, they would earn 5,250 pesos or more, which covers the necessary cost of a mechanical dryer. The price escalation of fuel is one of the constraints to introduce the mechanical dryer. But as the selling price of rice rises also following the price of fuel rising, thus it may not become a serious constraint. Since the higher quality of the farm produces induces the higher price, an increase of the agricultural income can be expected.

## (3) Planning of Post Harvest Facilities

### a) Drying facilities

As drying facilities there are private solar dryers, multi-purpose solar dryers, multi purpose pavement and mechanical dryers. The private solar dryer is paved some space by concrete in the farm house back yard and a farmer uses it for drying and other purposes. The multi purpose solar dryers are paved the open space adjoining the public facilities (public hall, basketball court, etc.) by concrete, and villagers can use it as a drying yard. Barangay operates and controls it. The multi purpose pavement is paved a part of village roads by concrete, and is utilized as a solar dryer. The

mechanical dryer dries the palay and corn by blowing hot air. It is proposed that the MPCIs control it.

Comparatively rich farmers have private solar dryers paved part of their back yards by concrete and use them for parking spaces, depot for farming materials, etc. as well as for drying works. It is expected that this kind of facilities would be made more for other purposes than drying. Therefore, 15 % of total produces to be dried by private solar dryers are assumed. The solar drying method is inexpensive and presently most preferred by financially weak farmers, thus 80 % of the total produces would be dried by this method in the plan.

Demand for a mechanical dryer is strong, but considering the weather of this area after harvesting, dryers with substantial capacity would be needed. The study results conducted among the ARC's, that possess the mechanical dryers indicate the following. The farmers are experiencing hardship in repaying to the brokers in the form of agricultural products. For a reason of high utilization cost of the dryer compared to sun drying the dryers belonging to the inactive cooperatives are not being used effectively. Therefore, introduction of the dryers shall be planned after the cooperative has become active. The planned processing quantity by the dryers shall be 5 %, but when the demand for it increases, conversion is possible to the cereal dryer, which is not affected by the weather.

The required area for the solar dryer is calculated from the following equation. (refer to Appendix F for detail):

$$\text{Required area} = (\text{production quantity}) \div (\text{period of harvest}) \div (\text{conversion factor from moist to dry condition}) \div (\text{dry thickness}) \div (\text{volume per cavan}) \div (\text{drying period})$$

production quantity	: refer to "Agricultural development plan"
period of harvest	: refer to "Agricultural development plan"
conversion factor	: 0.845
dry thickness	: 0.135 m
volume per cavan	: 0.15 cu.m/cavan
drying period	: 2 days

The standard dimensions of the multi purpose solar dryer shall be 15.0 m x 28.0 m x 0.10 m (thickness), which is adopted by DA. At each solar dryer has a set of goal post of basketball and will be utilized as a basketball court. Establishment of multi purpose solar dryer presupposes availability of land donated by the farmers.

#### b) Warehouse

The capacity of warehouses shall be 20 % of the total production volume of palay and corn. Since the grains must be well dried, the warehouse shall be planned to be equipped with a solar dryer and a mechanical dryer. The warehouses would have the following capacity;

Solar Dryer	15 %
Mechanical Dryer	5 %

The area necessary for storage is calculated based on the assumption that the 50 kg bags are stacked 20 layers. 3 m each shall be added to both sides of the necessary rectangle. This belt of 3.0 m shall be used to prevent moisture and as space for various works. (refer to Appendix F for detail)

#### c) Number of planned drying facilities and warehouses

Based on the contents of the plan described above, the next Table 6-1-4 is prepared indicating the required area and volume of the drying facilities and the storehouses and those of the existing

facilities and then the resulting number and quantity of the planned facilities. The number of facilities for each ARC is shown in “Development Plan for each ARC”.

**Table 6-1-4 Proposed Quantities of Solar Dryers and Warehouses**

Multi-purpose pavement (controlled by Barangays)	Multi-purpose drying yard		Cereal dryer	Warehouse
	Controlled by Barangays	Controlled by cooperatives	(controlled by cooperatives)	(controlled by cooperatives)
15,090 sq.m	409,667 sq.m	118,668 sq.m	22 sets	5,935 sq.m

#### (4) Farmers’ Sharing Cost to Development

The construction works of the multi purpose solar dryers controlled by Barangay are carried out in the following manner. The materials such as cement, aggregates, and etc. and the engineering for construction shall be offered by LGU and Barangay supplies the labor. Therefore, the major contribution of farmers to the development cost is the supply of labor. The warehouses are the facilities, which the cooperatives would require for their own activities and hence the construction cost including the cost of land shall be fully borne by MPCI.

#### (5) Operation and Maintenance Plan

The contents of the operation and maintenance of the multi purpose dryer controlled by Barangay are cleaning of the facilities (concrete pavement), repairing of damaged places, establishment of use schedule of the facilities with the consent of the farmers and enforcement of the schedule. The warehouses including the multi purpose solar dryer and the mechanical dryer shall be operated and maintained by MPCI.

#### (6) Development Concept in the Planning of the Post Harvest Facilities

The development concept in the post harvest facilities development consists of “fairness”, “equitability” and “mutual consideration”. In order to secure this concept the following points are to be borne in mind. Of the post harvest facilities, Barangay controls the solar dryers and MPCI operates and manages the warehouse with the solar dryer and the mechanical dryer.

- a) Concerning the utilization of the post harvest facilities, especially the solar dryers, the schedule to use the facilities is to be established twice a year before the start of each cultivation in the general assembly attended by all the beneficiary farmers and is to be agreed upon. If any circumstance arises where the conditions of crop growth necessitate change in utilization program, then in such cases an extraordinary general assembly can be called and a change of the schedule be effected. In case there are unexpected rains, the number of rainy days extends the original scheduled days but the basic schedule shall not be altered. Before the construction of the solar dryer, a regulation



concerning the usage of the facilities shall be drafted in the Ilocano language by Barangay, distributed to all the beneficiaries and made them known and adhere.

- b) For the selection of the location of the solar dryers, participation of farmers is called for at the planning time in the general assembly and the location will be selected at a place easy to be used by everybody and easy to be expropriated. Consideration shall be given to the concept that the location be at a practical distance from the cropping fields and the farmhouses. DF shall attend the general assembly and confirm that equitable discussions are held.
- c) If a necessity arises for expropriation of land for the solar dryer, care should be taken not to expropriate the land from the small-scale landowners. When the location of the dryer requires the land of the small-scale landowners, the location shall be changed to minimize the utilization of land of the small-scale landowners. Compensation for the expropriated land should be, besides money, offers of replacement land in the village-owned area.
- d) The rental fee for the solar dryer shall be determined according to the quantity. A regulation shall be established for non-payment of the rental fee, including prohibition of use, forced collection (through placing certain volume of the crop of the user under Barangay control and replace the fee with it), etc. The collected fees shall be kept to the special account of the Barangay concerning the rental fee.
- e) The beneficiaries should repay the construction cost of the solar dryer with proportional to the cultivation acreage. This rule shall be incorporated into the regulation of the usage, and the penalty for not paying the contribution shall also be clearly stipulated.
- f) The rule and amount of charging the outsider for rental shall be determined, and the received fees shall be credited to the special account of the Barangay concerning the utilization of the solar dryer.
- g) For the usage of the warehouse, applications of the volume shall be received before the beginning of cultivation. If the total volume exceeds the capacity of the warehouse, the excess volume shall be divided and proportionally deducted from the applied volumes. The collected fees shall be controlled by MPC. The fees are determined by multiplying the unit fee by the number of utilization days adjusted by a fixed rate. Payment in kind shall be permitted.
- h) The utilization fee for the mechanical dryer shall be in proportion to the quantity of the palay and corns to be dried. A rule shall be established for non-payment of the utilization fee in the cooperative regulations. The penalties shall include prohibition of use, forced collection of fees (A certain amount of the harvest shall be placed under Barangay control and the fee is paid in terms of the crop), etc. The received fees shall be credited to the special account of MPC concerning the utilization

#### **6.1.4 Farm to Market Road Development Plan**

##### **(1) Basic Idea of Farm to Market Road Development Plan**

The road development plan in the ARC development is the improvement of the traffic network from the farms to the market. The market is the Poblacion, which is the capital of the municipality. The traffic network comprises the national roads, the provincial roads, the municipality roads and the Barangay roads. The national roads, the provincial roads and the municipality roads are planned by the Government and LGUs, which are different agencies from the agrarian reform agency. Therefore, they

are excluded from this road development plan under the ARC development. However, even if any road is not a Barangay road, if it is not possible to expect any effect of improvement of the circulation network for the agricultural produces, it will be included in the plan. At the crossing point of the roads over rivers, crossing structures such as bridges or culverts will be planned.

The base of this proposed plan is the ARC development plan assisted by DF. Based on the ARC development plan and the discussion meeting with the farmers, on the necessity the plan with higher priority roads in the ARC development plan were selected in the development plan. When the road routes are duplicated or when the access function to the market is questionable, the roads are discarded. The road improvement plans in the residential area and road pavement plans are included in the post harvest facilities plan, thus these plans are excluded from this proposed road plan.

## (2) Purposes and Effects of Road Planning

Farm roads are used not only for the transportation of agricultural inputs or outputs but also contribute to the improvement of the living conditions of the rural peoples. In addition to the primary purpose of smooth transportation of agricultural produces into and out of the fields, the improvement of the roads shall have the meaning of improvement of the social infrastructure, which is necessary for the daily life of the farmers and local residents.

The present condition of parts of the roads becoming impassable during the rainy season is giving the farmers unfavorable selling environment. There are places where only the big trucks of the brokers can enter. The farmers unable to ship the agricultural produces must pay the transportation fee (ex. 0.25 pesos/kg being paid to the cooperatives by NFA as an incentive). When roads passable under any climatic conditions are constructed, a common jeepney can be used as a transportation means instead of the brokers' trucks, enabling farmers or farmers' organizations to transport agricultural produces to the market. At the same time improvement of the roads will make it possible to solve the problem of emergency transportation of children or patients. It will thus improve the life environment of the village.

## (3) Farm to Market Road Planning

Farm road improvement within the scope of the ARC development is planned in two (2) categories, i.e., farm to market road and production road.

### a) Classification of roads

#### i) Farm to Market Road

This road connects the village and the market or between villages. It performs the function of not only the transportation road but also the road of public interest (life road). This road is planned to carry 160 vehicles per day. However, if another road of similar

size already exists outside the ARC area and will have similar function by connecting to it, the planning of a new road will be discarded.

#### ii) Production Road

This road connects the farmland and the village, and enables the transportation of agricultural inputs or produces into and out of the fields as well as activities of agricultural extension service personnel.

#### b) Width of roads

The widths of the vehicles expected to pass the road, the width of vehicles passing each other, the passable width and the road shoulders are added together to fix the road width. The final dimensions are as follows;

##### i) The necessary vehicle width

<u>Kind of vehicles</u>	<u>Width of vehicle</u>
Sedan car	1.7
Large truck (payload more than 6 tons)	2.5
Small truck (payload 2 tons)	1.7
Light vehicles	1.4
Cultivator (less than 6 HP)	0.6
Cultivator (more than 6 HP)	0.8
Tractor (less than 30 HP)	1.3
Tractor (30 HP class)	1.7
Tractor (more than 50 HP)	2.3
Bicycle	1.0
Tricycle (as measured)	1.7
Motorcycle (as measured)	0.8
Jeepney (as measured 170-180 cm, aver. 180 cm)	1.8

##### ii) Width of shoulders

The width of shoulders shall be 1.0 to 0.5 m considering the safety driving of vehicles and peoples.

##### iii) Passing width between vehicles

Passing width between vehicles shall be 0.5 m considering the safety driving of vehicles. The out side width on both sides shall be 0.3 m each considering the safety of vehicles.

##### iv) Planned width of road

###### Farm to Market Road

The objective vehicles expected to be most frequent (a 2-ton truck and a jeepney) are considered and the following width is adopted.

<u>Items</u>	<u>Required width (m)</u>	<u>Remarks</u>
Width occupied by vehicles (2 ton truck or tricycle)	1.7 m	
Vehicle (jeepney)	1.8 m	
Passing tolerance	0.5 m	
Outside tolerance	0.6 m	(= 0.3 m x 2)
Total	4.6 m	5.0 m
Shoulders	2.0 m	(= 1.0 m x 2)
Total	6.6 m	7.0 m

#### Production road

On this road type, the vehicle and a people should be able to pass without being bumped. The people at the time of the passing of the vehicle shall move to the road shoulder. Thus, the space (width) for the walking people shall not be allocated. The waiting place for s vehicle (width 3.0 m x length 10.0 m) shall be constructed at about 1.0 km intervals.

<u>Required items</u>	<u>Required width (m)</u>	<u>Remarks</u>
Vehicle (jeepney)	1.8 m	
Human	(0.6 m)	
Passing tolerance	0.3 m	
Outside tolerance	0.3 m	(= 0.3 m x 1)
Total	2.4 m	2.5 m
Shoulders	1.0 m	(= 0.5 m x 2)
Grand Total	3.4 m	3.5 m

#### c) Road density

To improve the transportation (in and out) of the farm inputs and outputs, the road density of production roads shall be increased. The road density is calculated by the following equation.

$$\text{Road density} = (\text{Existing roads} + \text{Planned roads}) / \text{agricultural land area}$$

Average road density = 1 production road through the middle of 1 km square agricultural land

Agricultural land: 1,000 m x 1,000 m = 100 ha, Production road: 1.0 km

Thus, the road density = 1,000 m / 100 ha = 10 m / ha

Therefore, with the road density of 10 m/ha, it becomes possible to carry out agricultural products to the farm-to-market road with less than 500 m of transportation by manpower.

#### (d) Gradient and Paved Road

The maximum road longitudinal slope shall be 8 %. The effective road width shall be a gravel road. However, for the road section near the river or the creek, or where embankment height will be high by keeping the longitudinal slope of 8 % or less, the embankment volume becomes very

large, thus the right of way increases proportionately, the road longitudinal slope shall be increased up to the maximum of 15 %. The surfaces of such sections shall be concrete paved and anti-slippage treatment should be applied.

(e) Appurtenant structures

Appurtenant structure shall include side ditches to drain excess water on the road surface at the cut section of the road. The road crossing such as culverts by concrete pipes, etc. shall be installed as needed.

(f) River crossing structures

When rivers or creeks on the route of the planned road exist, bridges or culverts shall be constructed as a river crossing structure. The width of the river crossing structures shall be effective width of the road plus 0.5 m. If the bridge is submerged for more than 2-days during the flooding time of the river, a bridge is to be planned. Otherwise culverts are to be constructed.

(g) Road improvement plan

Depending on the present conditions of the roads, the following measures are conceived.

1) Rehabilitation of road, 2) Reconstruction/Improvement of road, 3) Construction of road, 4) adding the gravel

As 4) is a daily work of the road maintenance, it will be deleted from this road development plan. In accordance with the existing conditions of each road, the various measures to be taken are defined as follows;

i) Rehabilitation

- The sub-surface and the gravel pavement are relatively in good condition, but the road surface is uneven and bumpy making smooth passage of vehicles impossible.
- River crossing structures are defective.

ii) Reconstruction/Improvement

- Road exists as a gravel road. Compaction of the sub-surface is insufficient. Tendency to become soft making vehicle passage impossible.
- Crossing structure over the rivers, etc. is defective.

iii) Construction

- New road or existing road of which more than half the length become impassable during the rainy season.
- No pavement and mostly uncompacted sub-surface.

In either of the cases of Rehabilitation, Reconstruction/Improvement or Construction of the road, the completed road shall have a well-compacted sub-surface and a gravel road. Such roads will last for a long period when good operation and maintenance are applied. From the site study results the improvement methods are classified in three (3) types as described as follows.

Type A: Replace the gravel of the top layer and compact sufficiently

- Type B: Replace the sub-surface as required. After sufficient compaction of the sub-surface, the surface layer is finished.
- Type C: Replace the deteriorated sub-surface and compact, or form the sub-surface by adding hardening agents. Then finish the base and the top layer in the same manner as Type A and Type B.

The summary of the above the road rehabilitation and new road construction are shown in Table 6-1-5. The detail of the road improvement plan for each ARC/Cluster is described in “Development plan for each ARC”.

**Table 6-1-5 Total lengths of roads**

<u>Items</u>	<u>Farm to market roads</u>	<u>Production roads</u>	<u>Total</u>
Rehabilitation of road	4.7 km	100.7 km	105.4 km
Reconstruction/Improvement of road	15.0 km	127.3 km	142.3 km
Construction of road	4.4 km	19.5 km	23.9 km
Total	24.1 km	247.5 km	271.6 km

(4) Farmers' contribution to the Development Cost

Construction as well as operation and maintenance of Farm to Market Roads are executed by the budget of the provincial or municipal governments on the land supplied by the beneficiaries in accordance with the request of the residents of the ARC. Out of the cost of construction and operation and maintenance, half of the costs of heavy equipment hiring charge, costs of operators, costs of materials and fuel is borne by LGUs. However, common labors and offering of snack or soft drinks (special Philippine culture) are the contribution of the residents. According to the site interviews such contributions of the beneficiary residents to the construction and operation and maintenance costs, especially the supply of the right of way are well recognized by the residents. Also the DAR had already secured the right of way of 10 to 15 m wide at the time of farmland distribution.

(5) Operation and Maintenance

The farm to market roads are classified under the same class as the municipal roads, and therefore to be maintained and operated by the municipality office. It is, therefore, necessary to improve the engineering division of the municipality office and to strengthen/create the machinery division. The required machinery shall be allocated to this division, such as are necessary for operation and maintenance of the roads. The necessary right of way and the labor cost are fully offered by the farmers. The municipality office shall take charge of the costs of materials, fuel, and operation and maintenance of construction machinery. Other details shall be according to the regulation of the municipality office. The engineers of the municipality office shall be supported by the engineers of the PEO in establishing the operation and maintenance program. Except for emergency cases following disasters, the operation

and maintenance program shall be drafted by the operation and maintenance staff and has to be approved by the mayor and the municipal assembly. This program shall be sent to the responsible section of the provincial government. The provincial government shall adjust such programs and establish an operation and maintenance support program and notify the municipality office.

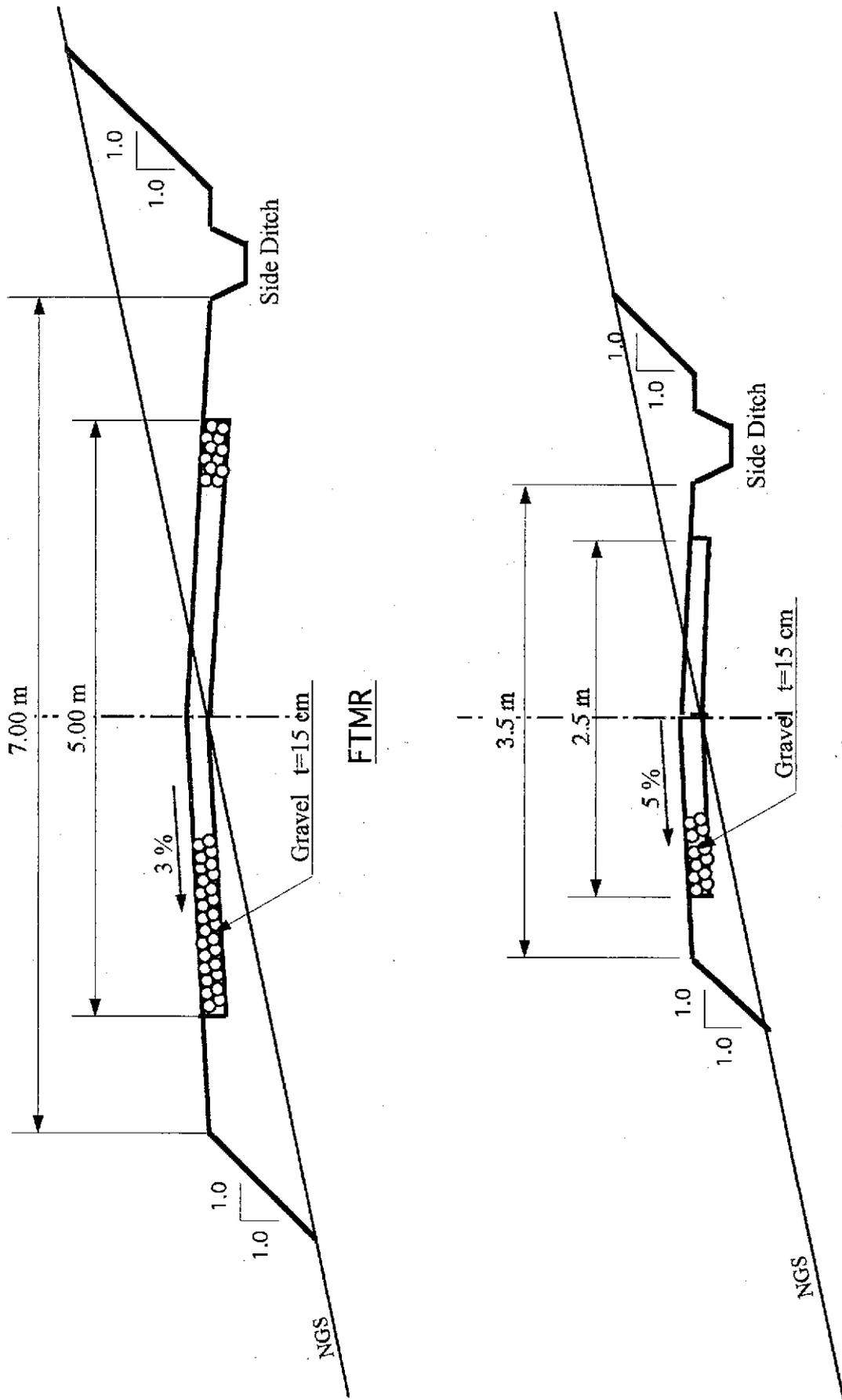
The provincial government shall render technical support and assistance by providing machinery at the request of the municipal office. The present provincial government has old or no design instruments, heavy equipment, repairing machinery, etc. and thus is not in a position to respond swiftly to the request of the municipality offices. In order to solve this situation, supply of surveying equipment, design instruments and heavy machinery shall be planned.

(6) Development Concept for Farm to Market Road Planning

The development concept in the irrigation development consists of “fairness”, “equitability” and “mutual consideration”. In order to secure this concept in the Farm to Market Road planning the following points are to be borne in mind. There are two types of Farm to Market Roads, i.e., Type I and Type II. Type I roads are controlled by the municipalities and Type II by the Barangay.

- a) The locations of the farm to market roads (Type I and II) are selected in the Barangay general assembly attended by all the Barangay peoples at the planning stage in order to decide on the locations which are easy to be used by the villagers and where land procurement is easy. The selected locations shall be easily accessible from the farming fields and the farms.
- b) The land to be used for the new farm to market roads (Type I and II) must be supplied by the beneficiary farmers. In this connection, consideration should be given to small-scale landowners. If their lands are proposed for use for the roads, route change should be considered, thus minimizing the land appropriation of such small landowners. The expropriated lands could be compensated not only by money but also by replacement lands.
- c) The contribution to the construction cost of the roads (Type II) (if repayment is required) shall be based on the proportionate rate of cultivation area of each beneficiary. This rule should be stipulated in the Barangay regulation. A clear penalty rule shall be established for non-payment of the contribution in the Barangay regulation, including forced collection (ex. through placing certain volume of the crop of the defaulter under Barangay control and replace the contribution fee with it), etc.
- d) For the rehabilitation works of the roads (Type II), the beneficiaries shall have the obligation to render labor services, which length should be proportionate to the size of the beneficiary area. If a beneficiary is unable to render labor services he shall be allowed to pay cash or in kind. All this arrangement shall be stipulated in the Barangay regulation.
- e) The operation and maintenance of the roads (Type II) shall be executed by the managing staff of the Barangay. But if the Barangay approves, road control staff might be elected from among the beneficiaries.

Figure 6-1-1 Typical Cross Section of Proposed FTMR  
(no scale)





## 6.2 Farmers' Organization Development Scheme

### (1) Strengthening of Rule/Regulatory Aspect

#### a) Social Preparation (SP)

##### i) Expansion of Coverage Area

At present, the Social Preparation conducted by DF and NGO do not cover all barangays in target ARCs., so that it is recommended that road accessibility should be improved in short term development, and then DARPO should assign new DFs, or subcontract this role to NGOs. Also, as indicated from DCC, the same procedure should be taken to the problematic cooperatives where the DF in charge is deemed to have insufficient capability. The following ARCs are on the file.

Table 6-2-1 DF Placement Plan

ARC	Number of Barangay	Number of DF at present	Proposed Number to Increase	Reasons
Amulungan-Rizal	1	1	1	> Barangay includes a sitio and the cooperative is hard to unite and the members are scattering. > The cooperative is "Patay" and still can not find out
la Suerte Cluster	5	1	4	> Except Brgy. La Suerte, no cooperative exists due to ill access and no electricity. > DF in charge needs more skill to organize farmers.
Dipasivi Cluster	4	1	2	> Not all barangays are organized due to ill access and no electricity. > One DF may be sufficient at Brgy. Dipacamo and Palawan, because BIDANI has been organizing both.
Cenea Cluster	5	1	3	> Centered Centro I and II, other 3 Barangays are locating like triangle shape. > San Guillermo MPC I composed of both Centro is vital, but the others are not yet organized or "Patay".
Minagbag	2	1	1	> 2 MPCIs are organized, but one is vital and the other is not. Degree of SP has big deference. > 2 barangays have different tribe and need individual
Luzon & Canan	Total 2	1	1	> Both have good accessibility but the coop members have different will and desire. Low "Strategic Vitality" shows the inconsistency of the nature of coop members. > It might be needed to change the coop policy in the future and DF with special capability will be required.
Progreso	1	0	1	> No cooperative due to poor access.
Yeban Norte	2	1	1	> The cooperative is facing on difficulty in loan repayment and DF needs more skill on finance. > Increasing of DF is needed at first stage, because individual discussion is necessary. If the loan problem is solved, one DF is enough.
Dalena & Simanu	3	2	1	> Predominant members of the coop are from Simanu Sur or Dalena, but one DF is needed at one Barangay due to the distance. > The existing coop has lost the target and stagnant. It is necessary to support them intensively.
Viola Estate	4	2	1	> One DF may be sufficient at Brgy. Santiago and Banquero, because Plan Intn'l has been organizing both. > The remaining two barangays are not yet organized due to ill access.

## ii) Qualitative Improvement

## Establishment of Support Team for Broader Area Coverage

It is proposed to establish a support team of SP operations for broader area. The support team with 7 part-time NGOs will provide DFs of necessary knowhow and manpower. The DAR should provide necessary manpower incharge. It is proposed that DAR will hold a board meeting every two weeks and monitor the progress of SP at each ARC. The participants of the board meeting are hired NGOs and all DFs. In case of necessity, the NGOs will go to problematic ARC and assist DF. Based on the progress of SP, the support team is asked to solve problems as well as to propose the timing and contents to be injected for the development of farmers' organization. The support team should also take responsibility to link the project to funding agencies. The composition of support team is proposed as follows:

- NGO (CAVALCO, ISU etc) 3 persons  
NGO should give an advice on the method of SP based on the level of organizational vitality. If necessary, they should visit the site and implement SP in cooperation of DF.
- DARPO (PARO) 1 person  
PARO should chair and coordinate the board meeting and support team.
- BDCD 2 persons  
BDCD should advise as the implementation core of SP.
- MDPO in charge 1 person  
MDPO should grasp the circumstances of the farmers' organization in charge. Based on the situation, MDPO will suggest the contents of support from LGU.

## Training for Social Preparation (SP) for DF

In order to achieve more efficient SP, it is necessary to train DFs for more theoretical and practical application. The training will be in charge by the NGOs and the government institutions<sup>1</sup> and the training manual will be consolidated. The funding should be made by DARPO, and the most important training considered are as follows:

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<sup>1</sup> Inclusive of experts and consultants dispatched from the government institutions.

Table 6-2-2 Contents of Proposed Training

Contents of Training (Implementing Agency)	Frequency	Reasons
Social Preparation and rule formation necessary for establishing Area Wide Cooperative (CAVALCO)	Once a month for 6 months.	> The vitality differential became apparent by MPCI, and some superior coops are moving toward integration. > There is no accumulative know how on the process of organizational expansion. in the Study
Credit management and monitoring (LBP, CAVALCO)	Continuous 5 days, 2 times a	> DF's role will become more important for the implementation of MF. > The most of DFs have no expertise in this field.
Leadership building (ISU, Consulting company)	Continuous 3 days, 2 times a	> Qualitative difference in forming leadership is apparent by ARC. > Incentive system is not properly functioning.
Negotiation skill building toward public sectors and external market (Expert from the government,	OJT	> OJT is more effective than theoretical one. > DF's capacity upgrading on presentation and public coordination can be expected.
Personnel Administration System (CDA, Consulting company)	Continuous 3 days, one time a year	> It is necessary to cope with forming of area wide cooperation. > In is necessary that the coop's training and promotion system should be done in more fair and

## b) Consolidation of By-laws and Policy

Towards the cooperative with high organizational vitality, the realistic by-laws and policy should be introduced. Toward the stagnant coops, it is necessary for DARPO to introduce model template first, and the revision should be added gradually. DFs should teach farmers' organization to be accustomed to a series of revision. The analysis on by-laws and policies in advanced cooperative indicates that the following improvements are necessary for each.

For the introduction of the incentive and penalty system, DARPO should take into consideration the circumstances of cooperatives, but the priority should be placed in the incentives for fee collector. Having said that the farmer's action driven on each

Table 6-2-3 Improvement Plan for bylaw and policy

MPCI	Existence of Policy	Distributio	Contents	Other Necessary Improvement
Bantug Petines MPCI	Make avail of Ilocano version		Need for incentive system in written format	
La Suerte MPCI	Make avail of Ilocano version and establish re-lending policy	Distributio n to all members	Need for incentive and penalty system in	It is necessary to revise overall article to cope with increase of members.
Epiphany MPCI	Establish guideline for training			To cope with glocalization, the policies on credit appraisal and fee collection should be revised.
Lapogan MPCI	Make avail of Ilocano version	Distributio n to all members	Need for incentive and penalty system in	
San Manuel MPCI	Establish re-lending policy	Distributio n to all members	Need for incentive and penalty system in	
Dipacamo Palawan MPCI	Establish re-lending policy		Need for incentive and penalty system in	The cooperative should form the policies on cooperative use of fish pond.
Quiling MPCI	Establish re-lending policy		Need for incentive and penalty system in	The cooperative should form the policies on cooperative use of solar dryer.
CAS MPCI	Make avail of Ilocano version	Distributio n to all members	Need for incentive system in written format	

activity differs<sup>2</sup> by who will be the direct recipient of benefit. As the result of sociology survey (called “BOX” survey), it is recommended that the incentive suitable to solve the problems of farmers’ organization be as follows:

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<sup>2</sup> Refer to “4.2.2 Farmers’ Organization”

Table 6-2-4 Suitable Incentive

Activity of Organization	Direct Recipient of Benefit	Action Drive of Farmers	Suitable Incentive	Example
Selection of Leader	Leader (Other Person)	Money (material), Reciprocity	non	Not depending upon action drive, the selection based on quality should be recommended to
Establish of Cooperative	Coop (Public)	Reciprocity, Individualism	Self-satisfaction	It is enough for one to be a founder and sign on bylaw and not necessary to give incentives
Formulation of Bylaw and Policy	Coop (Public)	Reciprocity, Individualism	non	No suitable incentive is found so that the support from outside is
Collection of CBU	Coop Members (Other Person) or Oneself	Money (material), Reciprocity,	Money (material) plus Award	Commission or salary is needed, and is preferable if award is added.
Management of collected CBU	Coop (Public)	Reciprocity, Individualism	Not necessary	Incentive is not necessary because illegal action automatically blackballs him from farmers'
Information Disclosure	Coop (Public)	Reciprocity, Individualism	Not necessary	ditto
Application of Loan	Coop (Public) or Oneself	Reciprocity, Individualism	Self-satisfaction	Incentive is not necessary, because the action will satisfy the sense of virtue and material incentive (credit) will be given to oneself if succeeded.
Selection of Loan Borrower in the Cooperative	Coop Members (Other Person) or Oneself	Money (material), Reciprocity	non	It should be recommended to farmers that the importance should be placed sense of virtue, but not to action drives.
Collection of Debt	Oneself or Coop	Individualism, Money (material)	Money (material)	Commission or salary is needed, and is preferable if award is
Repayment of Debt	Collector (Other Person)	Money (material),	Money (material)	Proper kickback should be given to good payers
Formulation of Coop Development Plan	Coop (Public) or Oneself	Reciprocity, Individualism, Money (material)	Award plus Money (material)	Giving manager's position to the leader of this activity, or giving salary is preferable.
Bayanihan	BODs (Other Person) or Coop (Public)	Money (material), Reciprocity, Individualism	Money (material) plus Award	The provision of milienda and transportation expenses is accelerate the activity. Plus thanks letter is preferable.

As for the introduction of penalty system, DARPO should propose a new setup in order that the materialistic penalty and the training to change one's mind should be coincided. Tutok Sako System is considered as an example, DFs should coordinate with the line agencies to train delinquents after they are penalized inside the farmers' community.

- (2) Strengthening of Organizational Aspect
  - a) Training for Developed and Advanced Organizations
    - (i) Training of Management Skill

As shown in the “4.2.2 Farmers’ Organization”, the project shall beef up the organization of advanced cooperatives in terms of management, accounting, and bookkeeping. The project shall provide intensive training to officers and managers of the cooperatives. The participants of the training will acquire the same level of knowledge as in private company in business sphere so that the cooperative will be able to deal with private sector equally. In reality, the following cooperatives are aspiring. The training will require 5 days in one

Table 6-2-5 Contents of Training

MPCI	Business Management	Accounting	Bookkeeping	Auditing
Bantug petines MPCI	✓	✓	✓	✓
La Suerte MPCI	✓		✓	
Epiphany MPCI		✓		✓
Lapogan MPCI		✓	✓	
San Manuel MPCI	✓	✓		
Dipacamo Palawan MPCI		✓	✓	
Quiling MPCI	✓	✓	✓	✓
CAS MPCI		✓		✓

time, and each training will be provided twice a year.

DAR will implement the project in cooperation with CDA and LBP. The foreign consultants will be hired to provide progressive management skills to implementing agencies and turn over the training manuals for sustainable use. It is recommended that the project should be implemented urgently, because some developed and advanced cooperatives are facing problems.

(ii) Entrepreneurial Training

Entrepreneurial training will be applied to the cooperatives that will complete the management training mentioned above. The program intends to provide more business-related skills such as proposal preparation, corporate planning, and negotiation technique. The project will also provide market-related on the job training (OJT) such as market simulation training, and inspection tour to Japan. Terms of training will be more or less one month. To expect intensive and continuous acquisition of skills, the cooperative should provide some counterpart training fee. It is recommended that as an incentive, a percentage of training fees will be refunded in case the cooperative is awarded citations by LBP, NATCCO or equivalent institutions. The source of this refund shall come from income paid by cooperatives for this training.

## b) Training and Development of Viable and Developing Organizations

For the developing and viable cooperatives, it is proposed to apply intermittently, but intensively, PMS and excursion<sup>3</sup> to superior cooperatives. The project will require co-working between DF and NGO for the implementation. The NGO will strengthen the organization at the pace of 4 ARCs a year in close coordination with the DFs.

## (3) Strengthening of Infrastructure/Resource Aspects

## a) Introduction of Technical Assistance Program

According to the result of DCC, the cooperative in some ARCs are rather vitalized compared with other ARCs. Accordingly, it is expected that the cooperatives in such ARCs will grow to “Area Wide Cooperative”, on the condition that sustainable social development process is provided by NGOs. Therefore, in order to root and to prevail the development processes in the Study Area, the introduction of technical assistance program is recommended at the short-term development.

The component of technical assistance program is recommended as follows:

## i) For the strengthening of rule/moral aspects:

Establishing Support Team (aforementioned) and technical support until it can stand alone.

Advice on consolidation of by-laws and policies and designing of template for advanced cooperatives.

Training of DFs and NGOs

## ii) For the strengthening of organizational aspects:

Training of advanced cooperatives

## iii) For the strengthening of infrastructure/resource aspects:

Implementation of small-sized livelihood project for the entry-point of organizational development

Technical assistance to infrastructure project which will be needed beforehand for strengthening farmers' organization.

Technical assistance for Microfinance Program which will be described at “Rural Credit Plan” in the succeeding pages.

## b) Advice on Technical Matter by Business Consultant

In some cases where technical related problem in cooperative business cannot be solved by DFs nor NGOs, the assignment of a business consultant who is familiar with cooperative business is recommended in this case. The business consultant will also participate in the board meetings and cope with technical problems that were reported by

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<sup>3</sup> It is said to be effective toward “Wait & See Attitude” indicated “3.8 Background of the Problem” in the previous pages.

DFs. Since the consultant may visit ARC so frequently, it is recommended that DAR should invite consultants through the international agencies applying a specialist dispatch program. The consultant should cover not only the Study Area for this project, but also other ARCs in the province on request basis.

As for this project, it is recommended that the experts dispatched by other projects like aforesaid Technical Assistance Program or the succeeding Farmer Ownership Model Project (FOM)<sup>4</sup> will be assigned temporarily. After the completion of these projects, DARCO should judge the necessity of experts from that time on. If so, DARCO should request to international agencies to dispatch experts or NGOs. Then, the project will be promoted to the regional level managed by DARRO and CDA. It is proposed that business consultants include two experts who are in charge of i) debt management, and 2) post-harvest/marketing. Two experts will take care of another provinces in the Region II and give technical advice to the cooperatives. They will rotate in the province every 3 months separately.

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<sup>4</sup> One of the schemes developed by World Bank aiming for alleviation of poverty. The World Bank is adopting these scheme more than 10 developing countries.



### 6.3 Development Support Scheme

#### 6.3.1 Rural Credit Plan

(1) The Projects with Immediate Benefit Accrual

a) Microfinance (MF)

The micro finance program will be introduced to make available easily accessible credits for those who have no or limited collateral. The program will consist of the following principles:

**Women:** The target of the program will be married women. Her husband or she should be an ARB and is engaged in income generating activities other than crop production. If they engage only in crop production, their loan eligibility will be strictly assessed. Those who have outstanding loans to other financial sources and cooperatives are not eligible. However, when Scheme 2 (refer to next page) is adopted, above-mentioned principles will not apply.

**Group responsibility:** The program will not require collateral to obtain a loan, but requires group responsibility for repayment. The loan applicants should form a five-member group and attend a preparatory seminar and training. Those who pass the examination only will be able to apply for a loan. The two members among five will be able to obtain a loan. Another two members can only obtain a loan when the first two has paid the entire loan. Finally, the last one (group leader) is eligible for a loan.

**Saving practice:** Three to six month saving practice will also be required before applying a loan. The purpose of this practice is to institutionalize saving practice in the members and to accumulate group funds to act as reserve in times of default.

**Repayment:** Repayment will be made weekly when a center meeting, consisted of eight to ten groups, is held. Lending will be made also at the meeting (in case of Scheme 1 mentioned below). The loan ceiling will be 3,000 pesos or so and will be gradually increased for the non-first-time borrowers after all the past loans have been paid. The purpose of the granting of loan is for the borrowers to engage in any kind of small-scale income generating activities except crop production. The lending conditions will be i) an interest of 15 % per annum and ii) terms of payment is maximum six (6) months, which can be extended for non-first-time borrowers.

Based on the principles described above, the following two (2) kinds of scheme will be introduced.

#### **Scheme 1 : Microfinance to Farmers' Organization by Existing Donor**

Microfinance program being implemented by NGOs such as BIDANI and

CAVALCO will be applied. The recipients are women's organization<sup>1</sup> formed in each ARC. BIDANI is responsible for small-sized loan less than 5,000 pesos/person, and the bigger loan than CAVALCO or commercial banks handle this. DF will be responsible for taking over the shift of loan donor. At present, the volume of fund and human resources are quite limited in BIDANI's microfinance, so that it is recommended that 2 million pesos of resource fund (about 3 times of existing one) together with 300,000 pesos of annual running cost should be provided without interest. If possible the resource fund will be sourced from CARP fund, otherwise LBP's loan will be applied while DAR will shoulder the interest.

## **Scheme 2 : Microfinance to Cursillo by Diocese of Isabela Province**

In cooperation with DARPO and LBP branch offices, Non Profit Organization (NPO) headed by the bishop of Diocese of Isabela Province should be established and registered to SEC. The NPO consists of a bishop, priests, and selected pastors. The resource fund will be secured by LBP and managed by the NPO. At beginning, the scheme will cover 5 municipalities with selected 25 Barangays, and the total cursillo borrowers will be 250<sup>2</sup>. Before implementation of the scheme, LBP or DARCO will dispatch two (2) foreign experts<sup>3</sup> specializing in the Philippine Company Law and microfinance to the Diocese for 2 years. During the preparatory period, the necessary training will be provided as follows:

- i) LBP trains priests and pastors in the of operation of microfinace
- ii) NGOs (BIDANI and CAVALCO) train cursillo in credit management
- iii) DFs provide social preparation (SP) to cursillo
- iv) Line agencies train cursillo on livelihood project
- v) LBP and NGOs train DARPO and DFs on credit monitoring
- vi) The eligible borrowers are appraised by DF and pastor in charge and authorized by the priest who will visit the Barangay once a month for mass and deliver loan. To incorporate fairness and care, the first priority in selecting borrower is placed on "the poor farmers who can not join the farmers' organization" or "the families whose income source will be affected by the development", and the program will be continued at least one round rotation of lending for such poor strata. The criteria of "poor farmers" should be prepared by DARPO in objective manner, and fair guidelines will be formulated. In case the delinquency on repayment occurs, the priest will assist in debt collection. Further, aforesaid foreign experts will go together and increase collection rate. The overall management of the program will be made by the administrative office, which will be set up in the Diocese. The foreign experts will head the management at the beginning, and gradually transfer technique to newly formed NPO.

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<sup>1</sup> IGLO, RIC, ASG etc.

<sup>2</sup> These figures are based on the discussion with the bishop in Diocese of Isabela Province.

<sup>3</sup> As indicated in the precedent on St. Rose of Gamu Credit & Development Cooperative Inc., the expert related to Christianity is preferable.

b) Establishment of Joint Loan Appraisal Meeting

DAR, through closer tie-up with LBP should give another role to DF; that is the further involvement of DF from the first stage of loan arrangement. It is recommended that DF should take part starting from the loan planning stage and give proper advice to both donor and borrower on disbursement schedule, loan restructuring, and risks. In this sense, it is proposed that jointly, DAR and LBP should hold a Loan Appraisal Meeting on a monthly basis so that DFs would know their concerns.

c) The Farmer Ownership Model Project

The project is formed abstracting some good points from World Bank's FOM scheme. The Master Plan proposes to introduce this project to 3 ARCs each in both short and medium term developments. The selection of ARCs stresses strength of organizational power of existing cooperative and the accumulative amount of CBU. The involvement of consultant is 25 man-months for each ARC. Development process of this project is shown as follows: (refer to Appendix D.8)

- i) DAR will assign the consulting team with eight specialists to this project. Considering the importance of the project, all specialists should be foreigners. The specialists should consist of:
  - Marketing Specialist
  - Crop Production Specialist
  - Post Harvest Specialist
  - Financial Specialist
  - Business Development Specialist
  - Sustainable Agricultural Specialist
  - Rural Infrastructure Specialist
  - Risk Specialist
- ii) DAR will select target ARCs based on the above-mentioned criteria. Organizational vitality of ARC cooperative should be above average. Then, the cooperative, under the guidance of DAR will establish a limited company within the cooperative.
- iii) The project team works intensively with the farmers to determine which markets can be best served and which products will meet market demands. Climatological and agronomic conditions are taken into consideration when identifying an appropriate crop for production by the farmers, as well as farmers experience with the particular crop and production know-how.
- iv) The project team works with the farmers to create individual crop budget from which an aggregate cooperative crop production budget is obtained. In addition, the net working capital and capital investment requirements of the limited company and/or the marketing/business function of the cooperative are determined. These two sets of numbers – net working capital required by the farmers (for a complete input bundle) and for operating the business aspects of the project is combined for a total working capital requirement for the project. The value of 100 % of shares for the limited company is set equal to this amount.

- v) The project team together with the cooperative secures this budget through loans and grants. Preferably, it should be fulfilled by CBU, thus the cooperative with at least one million pesos of accumulative CBU can implement this project. Nevertheless, the procurement cost of capital is allowed on the business plan. These funds are held in escrow account.
- vi) The funds are utilized by the cooperative for purchase of the shares in the limited company as discussed above. These funds are paid into the company against monthly cash flow requirements, which ends at the cooperative's purchase of the company. The company utilizes the proceeds of its share sale to the farmers (1) to purchase and deliver on payment-in-kind terms, a complete input bundle (at market prices plus not more than 10 % handling charges) to the farmers (seeds, fertilizers, agro-chemicals, tools, implements, grain bags, crop storage rental and transport, etc.) and (2) to purchase the farmers' crops at harvest at the farm gate for cash, market prices. The company then will toll process, store, market and distribute products in accordance with the original market research and marketing plan.
- vii) In accordance with the original loan agreement and the loan payment schedule that are prepared with the farmers by the project team, the company will pay the loan on behalf of the farmers from its profits.
- viii) Once the loan has been paid in full, the company or cooperative is mandated by the project design to utilize 50 % of its post-tax profits for declaration and payment of annual dividend payments to the farmers in accordance with the quality/quantity of crops delivered to the company.

These processes will create farmers' ownership of the company, who purchases, processes and sells their crops. It is proposed that the project should be realized under the initiative of a high calibre international agency. Increasing the business consciousness and upgrading of skill for the beneficial farmers are expected in this project. In reality, increasing farmers' incentives motivates for a production increase both in quantity and quality. According to the achievement of World Bank, selling price of farm output has increased 15 % at average.

(2) Projects with Benefit Accrual in Medium Term – Good payer's Cooperative -

The first step of the project is to organize "Good Payers Cooperative"(GPC). DARPO and LBP will appraise the eligibility of coop members and classify individual good payers (GPs) from delinquent cooperatives. The GPC should be placed at three to four places<sup>4</sup> in the Study Area; one GPC covers 3 to 5 ARCs. GPC's coop members consisting of superior cooperatives will forward the products to Isabala Trading Company (ITC) in line with the specification defined by ITC's business plan. The CBU invested by the GPC members is utilized as a part of ITC's working capital, and simultaneously, it is accounted for as expense for stock purchase in the GPC's balance sheet. Thus, like the FOM project, a part

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<sup>4</sup> At the beginning of the project, one GPC per municipality is fine set up.

of owning rights to ITC will be transferred<sup>5</sup> to GPC in the end. Since ITC is categorized to private sector, without a tie of existing system, the loan beyond the frame of government institutions is possible. GPC can benefit as the recipient of the loan, and as the advantageous user of ITC's post-harvest project.

The GPs in delinquent cooperatives will be picked up and will be entitled<sup>6</sup> to join GPC. Expected membership of GPC is more or less 100, which will gradually increase in number at a pace of 20 to 30 members per year.

GPC will consist of Primary Cooperative Members and Good Payers Individual Members. The former, which is composed of good-paying cooperatives, has the formal cooperative membership, while the latter is made up of selected individuals from delinquent cooperatives. The cooperative officials are selected from primary cooperative members, but existing coop BODs will not be allowed. The project, after selecting eligible members, will realize simplifying of loan-related applications under LBP's special considerations. GPC will be established with perfect functions simultaneously when ITC is set up.

GPC is designed as a conduit of special incentives from Isabela Trading Company that will be further discussed in the following section.

(3) The Project with Benefit Accrual in Long Term – Isabela Trading Company (ITC) -

The project aims to establish proper and fair rural banking system<sup>7</sup>. It is expected that the interest rate will decrease moderately at the end.

It is proposed that the mother body of ITC should be post-privatized NFA. The additional shares should be owned by equity investment jointly by LBP, DAR, LGUs and private sectors. The ideal paid up capital will be more or less US\$15 million. Since the company has similar functions as that of the private lenders, participation of private sector<sup>8</sup> is necessary. It is strongly expected that DARCO together with proposed line agencies should suggest this idea to the Government and obtain its approval.

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<sup>5</sup> The relationship between ITC and GPC is the same as that with the consultants and farmers on "The Farmer Ownership Model (FOM) Project" in the sense that the project will transfer the ownership of ITC in the long run involving a number of economic entities in the area.

<sup>6</sup> The condition for GPC membership should be: i) no record of bill of loan from the cooperative, ii) follow and adopt by-laws specified by GPC, and iii) more than 1,000 pesos of capital share with 500 pesos of share contribution per cropping.

<sup>7</sup> By establishing semi-government-trading company that will temporarily be named Isabela Trading Company (ITC), the project will establish a competitive market mechanism.

<sup>8</sup> It is assumed that the private sector will include willing commercial banks, trading companies, and other equity investor. The scheme that involves commercial banking sector and LGUs will meet the direction of MAGKASAKA, and will consider the recently conceived line of projects planned by Asian Development Bank.

The major business lines of ITC are three (3), these are: i) lending credit to GPC<sup>9</sup> ii) providing loan to private companies such as farm input manufacturers and farm output dealers, and iii) operating integrated project such as post harvest facilities and palay trading. The functions are: iii) integrated project mentioned above will be taken over from NFA. Out of US\$ 15 million of paid up capital, about half or US\$ 7 million of equity fund is allocated as loan to GPC and company operation, and the other half allocated as sector loan and trading business.

The project will be implemented by equity finance from NFA, DAR, LBP, LGUs and private sector. It is ideal that the project should not rely fully on loan from international agencies, but should be set up by the equity finance from above mentioned agencies and private sectors. Nevertheless, a portion of loan will be acceptable, but the project aims for quite similar business to private sector, which will guarantee a higher possibility to success if it has a higher portion of owned capital. The interest rate of sector loan is more or less 15 % per annum. This is fairly cheaper as compared with the interest rate of commercial banks of the Philippines at 20 to 22 %. The borrowers will be required to sign promissory note that will force them to provide some kind of assistance<sup>10</sup> to GPC. Generally, It might be true that compared with farmers, entrepreneurs are more credible. The lending scheme of ITC is to provide advantageous loan to GPC, while securing payment of loan through more credible entities with bigger profit.

The project will propose several regulations as for the arrangement between GPC and ITC. It is recommended that this concept should be incorporated in the by-laws of both parties.

GPC will benefit through accumulating the difference of interest. The profit generated will be used for facilities and running cost, however 10 to 20 % of profit shall be for the purchase of share of ITC.

To prevent illegal double loaning among the members, GPC will assign loan advisor, who will evaluate the individual applications and will check the efficiency and transparency of usage of applied loan.

The shares owned by the government will gradually be sold to GPC and within 20 years; the majority of share will be sold to GPC. GPC will then have more or less 20 % of share of ITC.

It is expected that ITC will make a considerable profit within two to three years of operation. These profits shall be utilized to pay loan to LBP, a portion of which shall be allocated to provision of training for the members of GPC.

The number of management staff of IPC shall be minimal. Especially, to avoid

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<sup>9</sup> Objectively, if private informal lenders reduce interest rate from 5 % per month to 4 % per month, ITC will be able to reduce it to 3 % per month. Theoretically, the interest of ITC to GPC will be minimized until 2 % per month even in the tightest assumption that ITC utilizes LBP loan at 15 % per annum.

<sup>10</sup> For instance, the farm inputs dealer can obtain loan on the condition that they will sell fertilizers at 20 % discounted price to GPC.

political intervention, ITC shall not hire high profile retirees, nor politically recommended applicants.

ITC will start operations by more or less 50 staff, out of which 30 shall be trade account officers and the remaining 20 shall consist of the management and indirect staff. The first CEO should also be from the private sector, who has considerable political and business influence in the area.

### **6.3.2 Livelihood Plan**

As ARBs are poor and they have scarce opportunities of off-farm income, livelihood development plan is formulated to improve balance of their home economy, based on the concept of 'Care'. The purpose is to improve family nutrition, to save spending and to add income from selling the surplus of the products. The livelihood development projects will be operated in a small scale and led by NGOs. However, the projects need the support on seed supply and technology by the relevant government agencies. Since it is necessary to improve home economy of the poor quickly and the effects from the projects appear in a short time, the projects shall be implemented from the first year in the Short Term Development Plan. A project for Women Club will be, however, carried out after farmers' organization is strengthened. (refer to Table C.3.2 in Appendix G)

#### (1) Livestock and Poultry Development

Calves of Carabao and cattle, kids and piglets shall be dispersed to farmers in a revolving way, called 'animal dispersal plan'. NGO will gather applicants from farmers, register their names, and put priority of the revolving turn on the base of 'Fair' manner. When a calf or a kid is born, mother will be handed to the next farmer in the order till the last applicant receives an animal. This program will start in the first year. It will be led by NGO at the initial stage and operated by Barangay council later. The veterinary office will provide the seed animals and technical support. Carabao and cattle will be raised as a drought animal and they will supply meat later. Pig and goat will be raised for fattening, and poultry for egg and meat. Abundant corn in the area can feed animals with natural grass. Technical supports on raising, inoculation and artificial insemination are required in the programs.

#### (2) Backyard Gardening

Vegetables will be grown at the backyard to improve family nutrition, and the surplus may be sold locally. The climate is favorable for vegetable growing all year round. Extension workers will disperse backyard gardening to women on the concept of 'Care'. A

garden in a Purok will be used as a demo-farm every year for three (3) years. The demo-farm should be selected on the base of 'Fair'. The extension workers will provide the seed for demonstration.

(3) Fish Culture

Freshwater fish is an important source of protein for the local population. Tilapia is the most popular fish reared in the Study Area and gains good profit at present. Catfish and carp may be added to the fish culture in the future. NGO will lead this program, and it will gather applicants for fish culture. Agricultural extension workers will judge the land topographically for fish raising. If the land fits to fish culture, a pond will be constructed by the Small Farmer Reservoir project (SFR) of DA. The fry will be provided by Cagayan Valley Research Outreach Station for Freshwater Resources (CVROSFR), and the technology of fish raising will be provided at the station. Fish may be consumed at home or sold at the local market for additional income. This project will be initiated from the beginning, but fishpond will be constructed in the first year and fish raising will start at the second year.

(4) Mushroom Culture

Rice straw mushroom (*Volvariella*) becomes popular and makes good profit these days. Dried banana leaves are used as bed instead of rice straw in the Study Area. Agricultural extension workers will disseminate this program to women in ARCs on the base of 'Care', and select a demo-farm on the concept of 'Fair' among the applicants. The extension workers will be trained first at the RCPC on how to grow mushrooms and they will disseminate the technology to female farmers. The seed fungus will be provided by RCPC. This program will be started in the first year. It is able to contribute to farm income and generation of job opportunity for women.

(5) Simple Food Processing

Simple food processing which does not need special equipment shall be disseminated to preserve farm products and sell the products in the local market. This plan includes banana chips, banana vinegar, pineapple vinegar and dried fruits. NGO will promote this program and women clubs as RIC or Green Ladies Club will operate it. The Provincial office of Science and Technology will support the clubs technically. As the operator is women organization, this program will be started after strengthening of farmers' organization. This program will contribute to adding income, making profit from the surplus farm products and generation of job opportunity in the rural area.



Table 6.3.1 Outline of Livelihood Development Plan

**Concept of Livelihood Development Plan**

Livelihood development is promoted in a small scale by NGOs, using agricultural resources. The products will be consumed at home in principle, will improve family nutrition and will save family spending. The surplus of the products may be sold in the local market and help adding cash income to home economy. Simple food processing will be operated by women organization as RIC or Green Ladies Club.

**Outline of Livelihood Development Plan**

**Livestock development plan:** Cattle, Carabao, Pig, Goat, Poultry(improved native chicken)

Applicants are put priority in the 'Fair' manner in a revolving order. The program will start with 6 animals (male: 1head, female: 5heads) Animals will be dispersed to next farmer when a baby animal is born. The program will be continued until all the applicants receive an animal. Since a pig bears many piglets, the dispersal will be quick. A cock will be introduced to improve the native chicken.

**Backyard gardening plan:** A demo-farm will be set in each Purok for 3 years and the technology will be dispersed to the other.

**Fish culture plan:** Telapia will be raised by 2 farmers in an ARC. (Catfish and carp may be included in the future.)

Recruiting the applicants, judgement of topography, construction of pond (SFR program), training of fish culture, release of the fry.

**Mushroom culture plan:** Rice straw mushroom, use of dried banana leaves, provision of seed fungus by ROPC, women.  
**Simple food processing plan:** A women organization will operate the food processing. Banana vinegar, pineapple vinegar, sugar cane vinegar, banana chips, dried mango and dried pineapple. The revolving fund will be microfinance.

**Outline of Development Plan by the group of ARCs and by the stages of development**

Group of ARCs	Topography	Development Plan			Development stages		
		Development plan	Short-term (1-5 years)	Medium-term (6-10 years)	Long-term (11-20 years)		
<b>Prime ARCs</b>	Agr. infrastructure Almost flat With irrigation	Livestock development plan	Rev. order. training for 4 years	Continue animal dispersal	Finish when all applicants benefited		
		Backyard gardening plan	A demo-farm/Purok for 3 year	Continue by farmers themselves	Continue by farmers themselves.		
		Fish culture plan	Topo. judgement, for 3 years	Continue by farmers themselves	Continue by farmers themselves.		
<b>Developing ARCs</b>	Almost flat (River terraces)	Livestock development plan	Rev. order. training for 4 years	Continue animal dispersal	Finish when all applicants benefited		
		Backyard gardening plan	A demo-farm/Purok for 3 year	Continue by farmers themselves	Continue by farmers themselves.		
		Fish culture plan	Topo. judgement, for 3 years	Continue by farmers themselves	Continue by farmers themselves.		
	Mixture, flat and hilly (irrigation dev. plan)	Livestock development plan	Rev. order. training for 4 years	Continue animal dispersal	Finish when all applicants benefited		
		Backyard gardening plan	A demo-farm/Purok for 3 year	Continue by farmers themselves	Continue by farmers themselves.		
		Fish culture plan	Topo. judgement, for 3 years	Continue by farmers themselves	Continue by farmers themselves.		
<b>Remote ARCs</b>	Mixture, flat and hilly	Mushroom culture plan	Training for 1 year. 1st year	Continue by farmers themselves	Continue by farmers themselves.		
		Livestock development plan	Rev. order. training for 4 years	Continue animal dispersal	Finish when all applicants benefited.		
		Backyard gardening plan	A demo-farm/Purok for 3 year	Continue by farmers themselves	Continue by farmers themselves.		
	Almost hilly	Fish culture plan	Topo. judgement, for 3 years	Continue by farmers themselves	Continue by farmers themselves.		
		Mushroom culture plan	Training for 1 year. 1st year	Continue by farmers themselves	Continue by farmers themselves.		
Simple food processing plan	Training for 2years after prep.	Continue by women club.	Continue by women club.				

### 6.3.3. Management Capability Building Plan

The objective of this Plan is to increase the management capability of the agencies' staff as well as the farmer beneficiaries for the effective and efficient implementation of the proposed development plans. The target agencies' staffs are the DARPO's staff including DFs, government officials of line agencies and LGUs, NGO staff and so on. The target farmer beneficiaries are mainly the farmers playing important roles in operation and maintenance of the projects, such as Barangay officials.

The expected outcomes are mainly as follows:

- a) The consciousness of the agencies' staff and the farmers towards the development will be improved.
- b) The capabilities of the agencies' staff and the farmers for problem analysis, planning and management will be enhanced.
- c) The ARCDP and BDP will be integrated with the participation of all stakeholders in the planning process of the development.
- d) The monitoring and evaluation system will be incorporated in the project management.
- e) The development capability of DFs and extension workers for community development will be enhanced.

The following training programs will be conducted by the existing training institutions such as CAVALCO, ISU, ATI, etc.

**Table 6.3.2 Training Programs for Management Capability Building Plan**

Programs	Major Subjects	Targets	Duration or Frequencies
(1) Development Planning	- Concept of development planning - Community mobilization skills - Data collection skills - Analytical tools - Information management skills	- DARPO officers - MARO - DF - MPDC - Municipal Engineer - MAO - Barangay Leaders - NGOs - Others	3 days at the planning stage
(2) Planning Workshop cum Training	- Cost/benefit of agri. activities - Development problems - Current development activities - Approaches to solve problems - Action plans - Roles of each participant	- DARPO officers - MARO - DF - MPDC - Municipal Engineer - MAO	5 days at the planning stage

		- Barangay Leaders - NGOs - Others	
(3) Monitoring and Evaluation	- Current monitoring activities - Forms of future M&E system - Necessary information system - Roles of each participant	- DARPO officers - MARO - DF - MPDC - Municipal Engineer - MAO - Barangay Leaders - NGOs - Others	3 days at the planning stage
(4) Training to Trainers	- Current training/extension activities - Community development skills	- DF - Agricultural Technician - NGOs	3 days at the planning stage
(5) Project Management (Social Preparation)	- Values - Communication - Motivation to staff - Coordination - Information system - Assessment of performances	- DARPO officers - Municipal officers - LAs' officers - Barangay Leaders - Others	3 days at the planning or implementation stage (Contents and members of training vary depending on the capabilities of participants.)

Of the above training programs, (5) “Project Management” will be conducted as a part of social Preparation<sup>1</sup> as a means to solve the problems related the backgrounds and essential issues mentioned in Chapter 3. More concretely, the intention is the improvement of consciousness, which is closely related to the problems upon development, of the farmers in the study area. The following issues will be focused.

- Current situation of the farmers and “wait and see” attitude - the farmers are reluctant to acquire the new agricultural technologies
- Immorality of the farmers perceiving the government supports as granted or neglecting penalties
- Lack of incentives for MPCCI members to collect a debt from other members
- “Everyone must be the same” principle that lessens the negotiation power of the organization or leads in failure to expel private lenders
- Many farmers sell their farm products at the same time, which lowers the prices
- Many farmers harvest the same products at the same time, which increases the hauling costs
- Lack of claiming injustice by the members of the cooperatives against the offenders

<sup>1</sup> The development plans regarding the strengthening of farmers’ organizations, agricultural development and micro-finance have trainings programs including social preparation in each plan.

- Lack of regulation of penalties
- Continuous debt to private lenders due to psychologically bound relationship
- Values such as Individualism, Materialism, Over-Reciprocity that deteriorate the morality of the farmers, and importance of the development concepts of fair, share and care

Agencies' staff will also participate in the training related to social preparation to learn about the consciousness of the farmers to be improved and measures against them. The programs from (1) to (5) will in principle be implemented in the municipal level. Aside from the municipal officers, related staff of the DARPO, Barangay officials, and NGO staff should participate.

Before implementing the training programs, the DARPO will conduct a needs survey with the help of DFs to the agencies' staff and the farmers on what kind of training they wish to be implemented. The results of the survey will be gathered in the DARPO and included in the annual training plan after the necessary adjustment. The staff participants to the training programs will be chosen by the head of related agencies, and the farmers participants chosen by the DF or the Barangay Captain. The DARPO will also conduct an evaluation survey on the training institutions after each program is done so that the training programs will be continuously upgraded.

All the training programs will be included in the short-term development plans and implemented within two years after the commencement of the project implementation. Yet since the impact of the trainings will appear after some time, an impact survey will be conducted annually to assess their effectiveness and review if they need to be modified or improved. The impact survey at the end of the second year will particularly review and determine if the training programs need to be continued.

The implementation of this plan will consequently lead to the building of the management capabilities for the whole development plans. Social preparation training will also contribute to raise the capabilities for operation and maintenance of facilities as well as application of technologies included in agriculture development plan, post-harvest development plan and farm-to-market road development plan.

## 6.4 ARC Classification and Development Strategies

### 6.4.1 Basic Strategies

“Basic Approaches of Development” mentioned in 5.3 are: (1) Eight development approaches to increase of ARB’s income, (2) Area-based ARC classification and strategies, and (3) Social preparation and step-by-step implementation. It was described that Agriculture Development and Farmers’ Organization Development Plans, among the eight development plans proposed by the study team, are of most importance and will be the core of ARC development. Other development plans will be considered as the supporting plans for the above two plans. In addition, it was explained that 21 ARCs will be classified into “Prime Agriculture Area”, “Marginal Area” and “Developing Area” according to the characteristics and needs of the areas. The eight development plans will then be applied to each Area in the different degree based on its development strategies. The development strategies of each Area are summarized as follows:

#### a) Prime Agriculture Area

The prime agricultural area is the rice-growing area and should already have the potential of attaining high agricultural productivity. The area is located where the scale of agriculture could easily be expanded. Development focus will be placed more on soft-side, including agricultural extension services and institutional development.

#### b) Marginal Area

The area is remote from production and market as well as political centers, and most of the farmers rely on subsistence-level agriculture. The development focus will be more to increase their agricultural production to meet their subsistence continuously and have some means to earn cash.

#### c) Developing Area

The area is located between the prime agricultural and marginal areas. Rice production will be promoted whenever possible, and crop diversification from corn to commercial products will be planed in other areas. The development strategies will incorporate both infrastructure and capacity building in balance, aiming at the improvement of agricultural production.

The forms of agriculture in each area should differ according to the geographic conditions and the potentiality of irrigation. Those three areas will therefore be further divided into some groups and have the different agriculture development strategies. On the other hand, the strategies for the strengthening of farmers organizations will be

prepared ARC by ARC since the capability of each organization varies considerably even in the same group. Their development strategies will be directly reflected to the implementation schedule for each ARC development plan.

#### **6.4.2 Links Among the Development Plans**

The development plans proposed in an ARC have linkages each other, which determines the framework of the implementation schedule of the projects. The implementation schedules will be discussed in 6.8.

As already mentioned, raising consciousness of the farmers, farmers' organizations and the officials of the related agencies will firstly be considered prior to the implementation of other plans. More concretely, infrastructure plans such as Irrigation, Post-harvest and Farm-to-market Road Development Plans require the programs first to improve consciousness of the parties who should be responsible for operation and maintenance after construction. The programs will be commenced at the early stage of the development and provided for the period necessary to achieve the target. Those programs will be included in Farmers' Organization Development and Management Capability Building Plans. Farmers' Organization Development Plan will target the existing farmers' organizations and have several modules to be applied depending on their capabilities and vitality.

Rural Credit and Livelihood Development Plans also require the raising of consciousness and technical skills first since they should be managed for long time. There will be the case however that the projects will be implemented immediately after the commencement of the development if the consciousness building is not an important factor. Those projects will be expected to contribute to raise the income of the farmers relatively in shorter period, and it would motivate the farmers to commit themselves further to the development.

#### **6.4.3 Effects to Other Areas**

In principle, the implementation of development projects in an ARC can be expected to have some effects on the neighboring ARCs. It will be ideal if the effects of the projects are gradually spread from the prime agriculture area to the developing area, the marginal area and finally all the ARCs in Isabela Province. In the reality, however, many municipalities are involved in the plan and all have the different development policies and capabilities, which will make the progress of the development differ considerably among the municipalities. In addition, the ARCs are dispersed

widely in the Province, which will make the spread of the development effects difficult. Thus, specific efforts should be necessary to spread the effects in one place to other areas.

The experiences accumulated in one ARC, such as why the things were successful or failed, should be shared by other ARCs in the same ARC group. It is therefore proposed that the DARPO establish the system of information and technology transfer from an ARC to DFs, LGU staff and the beneficiaries working in other ARCs. This plan will take 5 model ARCs for the feasibility study as the pilot areas, and include the strategies to reflect the experiences of those 5 ARCs onto the planning and implementation of other ARCs. One of the conditions of the selection of the model ARCs should therefore be that they are more capable since they have higher potentials to have an immediate effect than other ARCs.

#### **6.4.4 Development Targets**

Each development plan will have the targets to be achieved after 20 years from its commencement. The target of the whole ARC development plan will also be set in terms of “to what extent ARB’s income has been improved” as a result of the implementation of all plans. The targets are still all tentative and should be reviewed when financing is determined and the implementation schedule is fixed.

## 6.5 Project Design Matrix

The Project Design Matrix (PDM) shown in Figure 6-5-1 indicates the target to be achieved by the proposed ARC development plan as the project purpose. The PDM also includes the following for each development plan: the outputs that are necessary to attain the project purpose, the activities necessary to bear the outputs, the objectively verifiable indicators to measure the degree of the outputs, and the important assumptions which the project cannot control but will significantly be affected on its success.



**Figure 6-5-1 Project Design Matrix (PDM)**

Project Name: Development of ARCs in the Province of Isabela  
 Project Period: 20 years (Starting year = 2001 )  
 Project Area: 21 ARCs in the Province of Isabela  
 Target Group: ARBs

Prepared in October 2000

<b>Narrative Summary</b>	<b>Objectively Verifiable Indicator</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
<b>Overall Goal</b> ARB's income in the Province of Isabela is increased.	Ave. 10% increase of HH income by 20 years after the commencement of the project	- Statistics	
<b>Project Purpose</b> ARB's income in 21 ARCs is increased.	Ave. 20% increase of HH income by 10 years and Ave. 35% increase by 20 years after the commencement of the project	- ALDA Survey	No serious global financial crisis will take place.
<b>Output</b> 1. Agricultural productivity is improved through suitable and adaptable farm technologies. (= Agriculture Development Plan)	1-1. 20% increase in rice yield per ha 1-2. 10% increase in corn yield per ha 1-3 80% increase in production of high valued crops 1-4. 5% increase of meat production	- Agricultural Statistics - Research Center Reports	No serious natural calamity will take place.
2. Agricultural productivity is improved through irrigation. (= Irrigation Development Plan)	2-1. 1,850 ha of newly irrigated farmland 2-2. 236 ha with irrigation system is improved	- NIA Record	No serious drought will take plan.
3. Agricultural productivity is improved through reducing production loss after harvest. Prices of products are increased through improving their quality and adjusting their selling time. (= Post-harvest Development Plan)	3-1. 5 % reduction in loss of rice and corn through post-harvest treatment 3-2. Ave. 20 % increase in selling price of rice and corn	- Monitoring Survey	

<b>Narrative Summary</b>	<b>Objectively Verifiable Indicator</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
4. Production costs are decreased by lowering hauling cost. Prices of products are increased through improving their quality. (= Farm-to-market Road Development Plan)	4-1. Ave. 50% reduction in hauling cost 4-2. 20% increase in timely harvest	- Monitoring Survey	
5. Capabilities of farmers' organizations are strengthened. (= Farmers' Organization Development Plan)	5. 80% of MPCIs have more than 200 thousand pesos CBU.	- ALDA Survey	
6. Interest rates of credit from private lenders are reduced. (= Rural Credit Plan)	6. 0.5% decrease in prevailing interest rate from private lenders.	- Monitoring Survey	6. All NFA branches will join ITC projects.
7. Farm budgets become more stable. (=Livelihood Development Plan)	7. 200 pesos/month decrease in purchase of basic food items.	- Monitoring Survey	
8. Management capabilities of related organizations and ARBs are strengthened. (= Management Capability Building Plan)	8. 50 % annual increase in satisfaction of the staff in the related organizations and ARBs	- Monitoring Survey	8-1. All mayors will be fully cooperative to the project. 8-2. No serious administrative change will take place. 8-3. Trained staff will continuously work for the project.

Narrative Summary	Inputs	Important Assumptions
<p><b>Activities</b></p> <p>1. Agriculture Development Plan</p> <p>1-1. Rice Growing Plan</p> <p>1-2. Crop Diversification Plan</p> <p>1-3. Sloping Agriculture</p> <p>1-4. Community Plant Nursery Development</p> <p>1-5. Livestock Development Plan</p> <p>1-6. Intensification of Agricultural Extension Services</p> <p>1-7. Food Processing Plan</p>	(See Chapter 6)	<b>Assumptions</b>
<p>2. Irrigation Development Plan</p> <p>2-1. Construction of dam irrigation project</p> <p>2-2. Construction of pump irrigation project</p> <p>2-3. Construction and rehabilitation of canals</p>	(See Chapter 6)	2. No serious typhoons and floods will take place.
<p>3. Post-harvest Development Plan</p> <p>3-1. Construction of solar dryer</p> <p>3-2. Provision of mechanical dryer</p> <p>3-3. Construction of warehouse</p>	(See Chapter 6)	3. No serious typhoons and floods will take place.
<p>4. Farm-to-market Road Development Plan</p> <p>4-1. Rehabilitation of FTMRs (Type I and Type II)</p> <p>4-2. Construction of FTMRs including bridges and culvert/RC pipes (Type II)</p>	(See Chapter 6)	4. No serious typhoons and floods will take place.
<p>5. Farmers' Organization Development Plan</p> <p>5-1. Social Preparation</p> <p>5-2. Improvement of bylaws and policies</p> <p>5-3. Training for advanced and advanced class organizations</p> <p>5-4. Introduction of technical cooperation projects</p>	(See Chapter 6)	5-1. No serious administrative change will take place. 5-2. MAGKASAKA program will continuously be implemented.
<p>6. Rural Credit Plan</p> <p>6-1. Microfinance Program</p> <p>6-2. Farm Ownership Model (FOM) Project</p> <p>6-3 Good Payers Cooperative (GPC)</p> <p>6-4 Isabela Trading Company (ITC)</p>	(See Chapter 6)	6-1 NFA will be privatized on schedule. 6-2 No change of Philippine banking system.

<p>7. Livelihood Development Plan  7-1. Livestock and Poultry Development  7-2. Backyard Gardening  7-3. Fish Culture  7-4. Mushroom Culture  7-5. Simple Food Processing</p>	<p>(See Chapter 6)</p>	<p>7. NGOs will agree to livelihood development plans.</p>
<p>8. Management Capability Building Plan  8-1. Training for Management Capability Building</p>	<p>(See Chapter 6)</p>	<p>8. The governor will be continuously supportive to DAR.</p> <p><b>Pre-conditions</b></p> <ol style="list-style-type: none"> <li>1. No seriously negative political intervention will take place.</li> <li>2. No serious change in national administration will take place.</li> </ol>

## **6.6 ARC Development Plan by ACR/Cluster**

The following Tables show the ARC Development Plan by each ARC/Cluster in the Study Area. Since the Management Capability Building Plan relates to all proposed components in the development plan, the detailed contents of the Plan are already described in the previous section.

1. Lapogan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	As irrigation system is developed in this term, rice growing will be held as it is.	Rice: 95ha (wet season), 20ha(dry) (the same as the present)	DA, PAO, LGU	
Corn Growing Plan	Practice on IPM & INM shall be followed up.	Corn: 460ha (both seasons)	DA, PAO, LGU	IPM & INM follow-up
<Medium Term Development Plan>				
Rice Growing Plan	230 ha of cornfield will be converted to paddy after irrigation system is completed. Hybrid rice & mung bean will be introduced.	Rice: 325ha (both seasons) (increase 230 ha by irrigation) Hybrid rice: 17ha Mung bean: 100ha	DA, PhilRice, RPCP, PAO, LGU	Hybrid rice & mung bean introduction RTV disease training
Crop diversification Plan	23 ha, 10% of cornfield at the slope will be converted into fruit trees.	Corn: 207 ha (both seasons) Banana: 10ha, Calamansi: 3ha Avocado: 2.5ha, Santol: 2.5ha Guyabano: 2.5ha, Mango: 2.5ha	DA, CVIARC, PAO, LGU	Crop diversification training
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be further extended up to 25% of the paddy.	Rice: 325ha (both seasons) Hybrid rice: 82ha Mung bean: 100ha	DA, PhilRice, RPCP, PAO, LGU	
Crop diversification Plan	Crop diversification will be extended up to 46ha, 20% of corn field.	Corn: 184ha (both seasons) Banana: 20ha, Calamansi: 6ha Avocado: 5ha, Santol: 5ha Guyabano: 5ha, Mango: 5ha		
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	6,146 sq.m	Increase of selling price of rice and corn	Barangay	
Wear House by Cooperative	305 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	6,341 sq.m			
Mechanical Dryer at Wear House	80 cavan/day			
<Medium Term Development Plan>				
Solar Dryer by Barangay	12,292 sq.m	Increase of selling price of rice and corn	Barangay	
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
<Short Term Development Plan>				
Lapogan Communal Pump Irrigation Project	Irrigable Area : 325 ha, Water source : Cagayan River, lifting water from the River w/ 3 sets of 400 mm dia. pump, Proposed canal length : 3.2 km	Increase of paddy yield	NIA/IA	

1. Lapogan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road	2.5 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road	3.5 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
Production Road	2.9 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
Preparation of a restructuring plan		low interest	CDC	
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years	Women will grow vege. at the backyard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR project and Fish raising training
<Medium Term Development Plan>				
Livestock and poultry development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	none			

2. Quiling ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean will be 1/3 of the paddy.	Rice: 151ha (both seasons) (the same as the present) Hybrid rice: 8ha Mung bean: 50ha	DA, PhilRice, RCPC, PAO, LGU	RTV training Hybrid rice training and mung bean introduction
Crop Diversification Plan	Practice on IPM & INM shall be followed up. Crop diversification will be commenced at 4ha, 5% of the corn field.	Corn: 65ha (both seasons) Tobacco: 2ha String bean: 1ha, Egg plant: 1ha, Water melon: 1ha, Pea nut: 1ha	DA, CVIARC, PAO, LGU	IPM & INM follow-up, Crop diversification training
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 151ha (both seasons) Hybrid rice: 15ha, Mung bean: 50ha	DA, PhilRice, RCPC, PAO, LGU	
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 151ha (both seasons) Hybrid rice: 15ha, Mung bean: 50ha	DA, PhilRice, RCPC, PAO, LGU	
Crop Diversification Plan	Corn will be converted into vegetables at 6 ha, 10% of cornfield.	Corn: 63ha (both seasons) Tobacco: 2ha String bean: 1.5ha, Egg plant: 1.5ha Water melon: 1.5ha, Pea nut: 1.5ha	DA, CVIARC, PAO, LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 25% of the paddy.	Rice: 151ha (both seasons) Hybrid rice: 40ha, Mung bean: 50ha	DA, PhilRice, RCPC, PAO, LGU	
Crop Diversification Plan	Crop diversification will be further extended up to 12ha, 20% of corn field.	Corn: 57ha (both seasons) Tobacco: 2ha String bean: 3ha, Egg plant: 3ha Water melon: 3ha, Pea nut: 3ha	DA, CVIARC, PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		1,384 sq.m	Increase of selling price of rice and corn	Barangay
MPP by Barangay		800 sq.m	Increase of selling price of rice and corn	Barangay
<Medium Term Development Plan>				
Solar Dryer by Barangay		2,768 sq.m	Increase of selling price of rice and corn	Barangay
Wear House by Cooperative		140 sq.m		
Solar Dryer at Wear House		2,647 sq.m	Selling rice and corn at high price season	Cooperative
Mechanical Dryer at Wear House		30 cavan/day		After strengthening of Coop
<Long Term Development Plan>				
		none		
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<Medium Term Development Plan>				



2. Quiling ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road	3.4 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
	none			
<Long Term Development Plan>				
	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	none			

4. San Manuel ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management.	Rice: 300ha (Wet sea.) 230ha(dry sea.) (the same as the present)	DA, PAO LGU	
Corn Growing Plan	IPM & INM training will be held at demo farm.	Corn: 400ha (both seasons) (the same as the present)	DA, RCPC, PENRO, PAO CVIARC, LGU	IPM & INM training
Community plant nursery	Community plant nursery shall be set up to produce seedlings of perennials.	Plant nursery: 0.5ha	DA, RCPC, PENRO, PAO CVIARC, LGU	Plant nursery establishment Plant propagation training
<Medium Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 300ha (Wet sea.) 230ha(dry sea.) (the same as the present)	DA, PAO LGU	
Crop Diversification Plan	50 ha, 10% of cornfield will be converted into fruit trees, etc. Soil shall be protected from erosion at the slope.	Corn: 350ha (both seasons) Banana: 20ha, Pineapple: 5ha Mango: 2.5ha, Avocado: 2.5ha Santol: 2.5ha, Calamansi:2.5ha Gmelina: 15ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	Crop diversification training Sloping agriculture training
<Long Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 300ha (Wet sea.) 230ha(dry sea.) (the same as the present)	DA, PAO LGU	
Crop Diversification Plan	100 ha, 20% of cornfield will be converted into fruit trees, etc.	Corn: 300ha (both seasons) Banana: 40ha, Pineapple: 10ha Mango: 5ha, Avocado: 5ha Santol: 5ha, Calamansi: 5haGmelina: 30ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		5,823 sq.m	Increasment of selling price of rive and corn	Barangay
MPP by Barangay		400 sq.m	Increasment of selling price of rive and corn	Barangay
Wear House by Cooperative		300 sq.m		
Solar Dryer at Wear House		5,610 sq.m	Selling rice and corn at high price season	Cooperative
Mechanical Dryer at Wear House		70 cavan/day		
<Medium Term Development Plan>				
Solar Dryer by Barangay		5,823 sq.m	Increasment of selling price of rive and corn	Barangay
<Long Term Development Plan>				
Solar Dryer by Barangay		11,645 sq.m	Increasment of selling price of rive and corn	Barangay
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<Medium Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<Long Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<b>D. Irrigation Development</b>				
		none		
<b>E. Farm-to-Market Road Development</b>				

4. San Manuel ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>&lt;Short Term Development Plan&gt;</b>				
Production Road				
San Manuel - Sta Maria	1.5 km	Reducing the hauling cost	LGU	
San Manuel - Pangal Sur	0.6 km	Reducing the hauling cost	LGU	
SanManuel - SanAntonio	0.6 km	Reducing the hauling cost	LGU	
<b>&lt;Medium Term Development Plan&gt;</b>				
Production Road				
San Manuel - Sta Maria	1.5 km	Reducing the hauling cost	LGU	
San Manuel - Pangal Sur	0.6 km	Reducing the hauling cost	LGU	
SanManuel - Villa Fermin	1.2 km	Reducing the hauling cost	LGU	
SanManuel - SanAntonio	0.6 km	Reducing the hauling cost	LGU	
<b>&lt;Long Term Development Plan&gt;</b>				
Production Road				
San Manuel - Sta. Ano	1.0 km	Reducing the hauling cost	LGU	
San Manuel - Pangal Sur	0.6 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<b>&lt;Short Term Development Plan&gt;</b>				
	refer to section 6-3-1			
<b>&lt;Medium Term Development Plan&gt;</b>				
	refer to section 6-3-1			
<b>&lt;Long Term Development Plan&gt;</b>				
	refer to section 6-3-1			
<b>6. Livelihood Development Plan</b>				
<b>&lt;Short Term Development Plan&gt;</b>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produced for local market.	RCPC, LGU	Mushroom culture training
<b>&lt;Medium Term Development Plan&gt;</b>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<b>&lt;Long Term Development Plan&gt;</b>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<b>H. Environmental Consideration</b>				
	none			

5. San Miguel (Ramon) ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean will be 1/3 of the paddy.	Rice: 327ha (both seasons) (the same as the present) Hybrid rice: 16ha Mung bean: 100ha	DA, PhilRice, RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
Crop Diversification Plan	Crop diversification will be commenced at 4ha, 5% of the cornfield.	Corn: 72ha (both seasons) Penut: 1ha, Egg plant: 1ha Water melon: 1ha, String bean: 0.5ha Bitter gourd: 0.5ha	DA, CVIARC, PAO, LGU	Crop diversification training
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 327ha (both seasons) Hybrid rice: 33ha Mung bean: 100ha	DA, PhilRice, RCPC, PAO LGU	
Crop Diversification Plan	Corn will be converted into vegetables at 8 ha, 10% of cornfield.	Corn: 68ha (both seasons) Penut: 2ha, Egg plant: 2ha Water melon: 2ha, String bean: 1ha Bitter gourd: 1ha	DA, CVIARC PAO, LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 25% of the paddy.	Rice: 327ha (both seasons) Hybrid rice: 82ha Mung bean: 100ha	DA, PhilRice RCPC, PAO LGU	
Crop Diversification Plan	Crop diversification will be further extended up to 16ha, 20% of cornfield.	Corn: 60ha (both seasons) Penut: 4ha, Egg plant: 4ha Water melon: 4ha, String bean: 2ha Bitter gourd: 2ha	DA, CVIARC PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	7,421 sq.m	Increase of selling price of rice and corn	Barangay	
<Medium Term Development Plan>				
Solar Dryer by Barangay	14,841 sq.m	Increase of selling price of rice and corn	Barangay	
Wear House by Cooperative	240 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	6,084 sq.m			
Mechanical Dryer at Wear House	70 cavan/day			
<Long Term Development Plan>				
none				
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
refer to Tables 6-8-1 & -2				
<Medium Term Development Plan>				
refer to Tables 6-8-1 & -2				
<Long Term Development Plan>				
refer to Tables 6-8-1 & -2				
<b>D. Irrigation Development</b>				
<Short Term Development Plan>				
Construction of New Sub-Lateral Canal on MRIIS	Irrigable Area : 100 ha, Water source : Lateral Canal on MRIIS, Proposed canal length : 2.8 km	Increase of paddy yield	NIA/IA	

5. San Miguel (Ramon) ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
SanMiguel - Bandan Creak	1.5 km	Reducing the hauling cost	LGU	
Road to purok 8	2.6 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>	refer to section 6-3-1			
<Medium Term Development Plan>	refer to section 6-3-1			
<Long Term Development Plan>	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back- yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
<b>H. Environmental Consideration</b>				
	none			

6. Amulungan Rizal ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean will be 1/3 of the paddy.	Rice: 305ha (both seasons) (the same as the present) Hybrid rice: 15ha Mung bean: 100ha	DA, PhilRice RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 305ha (both seasons) Hybrid rice: 31ha Mung bean: 100ha	DA, PhilRice RCPC, PAO LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 25% of the paddy.	Rice: 305ha (both seasons) Hybrid rice: 76ha Mung bean: 100ha	DA, PhilRice RCPC, PAO LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	7,424 sq.m	Increase of selling price of rice and corn	Barangay	
<Medium Term Development Plan>				
Solar Dryer by Barangay	14,848 sq.m	Increase of selling price of rice and corn	Barangay	
<Long Term Development Plan>				
Wear House by Cooperative	0			
Solar Dryer at Wear House	5,347 sq.m	Selling rice and corn at high price season	Cooperative, Additional dryer to existing facility	After strengthening of Coop
Mechanical Dryer at Wear House	0			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
<Short Term Development Plan>				
Rehabilitation of Weir on Drainage Canal for water re-use	Irrigable Area : 50 ha, Water source : Drainage Canal on MRIIS, Proposed canal length : 0.0 km	Increase of paddy yield	NIA/IA	
<Medium Term Development Plan>				
	none			
<Long Term Development Plan>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Kabulalaan St.	1.8 km	Reducing the hauling cost	LGU	
Siva St.	2.5 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				

6. Amulungan Rizal ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Production Road				
Olimon St.	1.0 km	Reducing the hauling cost	LGU	
Vallage St.	1.0 km	Reducing the hauling cost	LGU	
Olonan St.	0.5 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back- yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	none			

7-1. La Suerte Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management. to produce seedlings of perennials.	Rice: 193ha (Wet sea.) 179ha(dry sea.) (the same as the present)	DA,PAO LGU	
Corn Growing Plan	IPM & INM training will be held at demo farm.	Corn: 882ha (both seasons) (the same as the present)	DA, RCPC, PENRO, PAO CVIARC, LGU	IPM & INM training
Community plant nursery	Community plant nursery shall be set up	Plant nursery: 0.5ha	DA, RCPC, PENRO, PAO CVIARC, LGU	Plant nursery establishment Plant propagation training
Livestock Development Plan	Cattle fattening will start at 5 hds/ farmer by 10 farmers.	Pasture: 10ha Cattle: 50 heads	Veterinary off. CVUPROS, LGU	Cattle raising training Inoculation Artificial insemination
<Medium Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 193ha (Wet sea.) 179ha(dry sea.) (the same as the present)	DA,PAO, LGU	
Crop Diversification Plan	91 ha, 10% of cornfield will be converted into fruit trees, etc. Soil shall be protected from erosion at the slope.	Corn: 791ha (both seasons) Gmelina: 40ha, Mahogany: 5ha Banana: 25ha, Pineapple: 10ha Coconut: 2.5ha, Mango: 2.5ha Calamansi: 2.5ha, Avocado:2.5ha Cassava: 1ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	Crop diversification training. Sloping agriculture training
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 10 farmers.	Pasture: 20ha, Cattle: 100 heads	Veterinary off. CVUPROS, LGU	Inoculation Artificial insemination
<Long Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 193ha (Wet sea.) 179ha(dry sea.) (the same as the present)	DA,PAO LGU	
Crop Diversification Plan	182 ha, 20% of cornfield will be converted into fruit trees, etc.	Corn: 700ha (both seasons) Gmelina: 80ha, Mahogany: 10ha Banana: 50ha, Pineapple: 20ha Coconut: 5ha, Mango: 5ha Calamansi: 5ha, Avocado:5ha Cassava: 2ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 20 farmers.	Pasture: 40ha Cattle: 200 heads	Veterinary off. CVUPROS, LGU	Inoculation Artificial insemination
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		5,302 sq.m	Increasment of selling price of rive and corn	Barangay
Wear House by Cooperative		5 x 100 sq.m	Selling rice and corn at high price season	Cooperative
Solar Dryer at Wear House		5 x 1,167 sq.m		
Mechanical Dryer at Wear House		70 cavan/day		
<Medium Term Development Plan>				
Solar Dryer by Barangay		5,302 sq.m	Increasment of selling price of rive and corn	Barangay
<Long Term Development Plan>				
Solar Dryer by Barangay		10,602 sq.m	Increasment of selling price of rive and corn	Barangay
<b>C. Farmers Organisation Development Plan</b>				



7-1. La Suerte Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Form to Market Road				
La Suerte - Buenavista	4.4 km	Reducing the hauling cost	LGU	
Production Road				
La Suerte - Lunac	1.4 km	Reducing the hauling cost	LGU	
Buenavista - Victory	0.8 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
Buenavista - San MarceloVictory	2.8 km	Reducing the hauling cost	LGU	
San Vicente - Macalauat	3.4 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produced for local market.	RCPC, LGU	Mushroom culture training
Simple Food Processing	RIC will implement the project.	Products will be consumed locally and sold at local market.	NGO, DOST	Food processing training
<Medium Term Development Plan>				
Backyard gardening	Continue the project.	Women will grow vege. at the back yard mainly for home consumption.	LGU	
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSFR	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	
Simple Food Processing	Continue the project.	Products will be consumed locally and sold at local market.	DOST	

7-1. La Suerte Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<a href="#">&lt;Long Term Development Plan&gt;</a>				
Backyard gardening	Continue the project.	Women will grow vege. at the back yard mainly for home consumption.	LGU	
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSFR	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	
Simple Food Processing	Continue the project.	Products will be consumed locally and sold at local market.	DOST	
<b>H. Environmental Consideration</b>				
Protection of Soil Erosion	Corop diversified plan of corn will contribute to protect soil erosion.	Protection of soil erosion	DA, DENR, LGU	Will of farmers

7-2. DIPACIVI Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management.	Rice: 92ha (Wet sea.) 72ha(dry sea.) (the same as the present)	DA, PAO LGU	
Corn Growing Plan	IPM & INM training will be held at demo farm.	Corn: 489ha (both seasons)	DA, RCPC,	IPM & INM training
Community plant nursery	Community plant nursery shall be set up to produce seedlings of perennials.	Plant nursery: 0.5ha	PENRO, PAO, CVIARC, LGU	Plant nursery establishment and Plant propagation training
Livestock Development Plan	Cattle fattening will start at 5 hds/ farmer by 10 farmers.	Pasture: 10ha and Cattle: 50 heads	Veterinary off. CVUPROS, LGU	Cattle raising training Inoculation Artificial insemination
<Medium Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 92ha (Wet sea.) 72ha(dry sea.)	DA, PAO LGU	
Crop Diversification Plan	50 ha, 10% of cornfield will be converted into fruit trees, etc. Soil shall be protected from erosion at the slope.	Corn: 439ha (both seasons) Gmelina: 25ha, Mahogany: 2ha Banana: 10ha, Pineapple: 5ha Guyabano: 5ha, Avocado: 3ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	Crop diversification training and Sloping agriculture training
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 10 farmers.	Pasture: 20ha and Cattle: 100 heads	Veterinary off. CVUPROS, LGU	Inoculation Artificial insemination
<Long Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 92ha (Wet sea.) 72ha(dry sea.) (the same as the present)	DA, PAO LGU	
Crop Diversification Plan	99 ha, 20% of cornfield will be converted into fruit trees, etc.	Corn: 390ha (both seasons) Gmelina: 50ha, Mahogany: 4ha Banana: 20ha, Pineapple: 10ha Guyabano: 10ha, Avocado: 5ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 20 farmers.	Pasture: 40ha and Cattle: 200 heads	Veterinary off. CVUPROS, LGU	Inoculation Artificial insemination
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		2,666 sq.m	Increase of selling price of rice and corn	Barangay
<Medium Term Development Plan>				
Solar Dryer by Barangay		2,666 sq.m	Increase of selling price of rice and corn	Barangay
Wear House by Cooperative		4 x 85 sq.m	Selling rice and corn at high price season	Cooperative
Solar Dryer at Wear House		4 x 767 sq.m		
Mechanical Dryer at Wear House		40 cavan/day		
<Long Term Development Plan>				
Solar Dryer by Barangay		5,330 sq.m	Increase of selling price of rice and corn	Barangay
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<Medium Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<Long Term Development Plan>				

7-2. DIPACIVI Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Road in Dipacamo	6.0 km	Reducing the hauling cost	LGU	
Road in Palawan	5.0 km	Reducing the hauling cost	LGU	
Dipacamo to Villa Remedios	3.0 km	Reducing the hauling cost	LGU	
Villa Remedios to Dipacamo	2.0 km	Reducing the hauling cost	LGU	
Road in Sinalugan	5.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
Palawan to Villa Remedios	2.5 km	Reducing the hauling cost	LGU	
Road in Sinalugan	5.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
Production Road				
Road in Sinalugan	5.0 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produced for local market.	RCPC, LGU	Mushroom culture training
Simple Food Processing	RIC will implement the project.	Products will be consumed locally and sold at local market.	NGO, DOST	Food processing training
<Medium Term Development Plan>				
Backyard gardening	Continue the project.	Women will grow vege. at the back yard mainly for home consumption.	LGU	
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSFR	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	
Simple Food Processing	Continue the project.	Products will be consumed locally and sold at local market.	DOST	
<Long Term Development Plan>				
Backyard gardening	Continue the project.	Women will grow vege. at the back yard mainly for home consumption.	LGU	

7-2. DIPACIVI Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSFR	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	
Simple Food Processing	Continue the project.	Products will be consumed locally and sold at local market.	DOST	
<b>H. Environmental Consideration</b>				
Protection of Soil Erosion	Corop diversified plan of corn will contribute to protect soil erosion.	Protection of soil erosion	DA, DENR, LGU	Will of farmers

7-3. SENE Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management.	Rice: 211ha (Wet sea.) 123ha(dry sea.) (the same as the present)	DA,PAO LGU	
Corn Growing Plan	IPM & INM training will be held at demo farm.	Corn: 778ha (both seasons) (the same as the present)	DA, RCPC, PENRO, PAO CVIARC, LGU	IPM & INM training
Community plant nursery	Community plant nursery shall be set up to produce seedlings of perennials.	Plant nursery: 0.5ha	DA, RCPC, PENRO, PAO CVIARC, LGU	Plant nursery establishment and Plant propagation training
Livestock Development Plan	Cattle fattening will start at 5 hds/ farmer by 10 farmers.	Pasture: 10ha and Cattle: 50 heads	Veterinary off. CVUPROS, LGU	Cattle raising training Inoculation Artificial insemination
<Medium Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 211ha (Wet sea.) 123ha(dry sea.)	DA,PAO, LGU	
Crop Diversification Plan	79 ha, 10% of cornfield will be converted into fruit trees, etc. Soil shall be protected from erosion at the slope.	Corn: 699ha (both seasons) Gmelina: 40ha, Mahogany: 4ha Banana: 15ha, Pineapple: 8ha Guyabano: 5ha, Avocado: 3ha Pomelo: 2ha, Calamansi: 2ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	Crop diversification training and Sloping agriculture training
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 10 farmers.	Pasture: 20ha and Cattle: 100 heads	Veterinary off. CVUPROS, LGU	Inoculation Artificial insemination
<Long Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 211ha (Wet sea.) 123ha(dry sea.)	DA,PAO LGU	
Crop Diversification Plan	158 ha, 20% of cornfield will be converted into fruit trees, etc.	Corn: 620ha (both seasons) Gmelina: 80ha, Mahogany: 8ha Banana: 30ha, Pineapple: 15ha Guyabano: 10ha, Avocado: 5ha Pomelo: 5ha, Calamansi: 5ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 20 farmers.	Pasture: 40ha and Cattle: 200 heads	Veterinary off. CVUPROS, LGU	Inoculation and Artificial insemination
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		2,699 sq.m	Increasment of selling price of rive and corn	Barangay
MPP by Barangay		850 sq.m	Increasment of selling price of rive and corn	Barangay
Wear House by Cooperative		5 x 100 sq.m	Selling rice and corn at high price season	Cooperative
Solar Dryer at Wear House		5 x 1,127 sq.m		
Mechanical Dryer at Wear House		70 cavan/day		
<Medium Term Development Plan>				
Solar Dryer by Barangay		2,699 sq.m	Increasment of selling price of rive and corn	Barangay
<Long Term Development Plan>				
Solar Dryer by Barangay		5,398 sq.m	Increasment of selling price of rive and corn	Barangay

7-3. SENE Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Centro-1 to Nakar	2.0 km	Reducing the hauling cost	LGU	
Centro-II to Estalla	2.0 km	Reducing the hauling cost	LGU	
Nakar to Centro-II	1.5 km	Reducing the hauling cost	LGU	
Nakar to San Vicente	2.0 km	Reducing the hauling cost	LGU	
Nakar to La Suerte	1.5 km	Reducing the hauling cost	LGU	
Estrella to Centro-II	1.0 km	Reducing the hauling cost	LGU	
Estrella to Nakar				
<Medium Term Development Plan>				
Production Road				
Centro-I to La Suerte	6.0 km	Reducing the hauling cost	LGU	
Centro-II to Magleticial	2.0 km	Reducing the hauling cost	LGU	
Road in Nakar	2.0 km	Reducing the hauling cost	LGU	
Road in Estrella	2.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
Production Road				
Road in Centro-I	5.0 km	Reducing the hauling cost	LGU	
Road in Centro-II	5.0 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back- yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSF	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produced for local market.	RCPC, LGU	Mushroom culture training
<Medium Term Development Plan>				
Backyard gardening	Continue the project.	Women will grow vege. at the back- yard mainly for home consumption.	LGU	
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSF	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	

7-3. SENE Cluster in Isabela Settlement				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<a href="#">&lt;Long Term Development Plan&gt;</a>				
Backyard gardening	Continue the project.	Women will grow vege. at the back- yard mainly for home consumption.	LGU	
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSFR	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	
<b>H. Environmental Consideration</b>				
Protection of Soil Erosion	Corop diversified plan of corn will contribute to protect soil erosion.	Protection of soil erosion	DA, DENR, LGU	Will of farmers



8. Minagbag ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean will be at 1/3 of the paddy.	Rice: 467ha (Wet sea.) 390ha(dry sea.) Hybrid rice: 20ha Mung bean: 130ha	DA, PhilRice RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
Corn Growing Plan	IPM & INM training will be held at demo farm.	Corn: 400ha (both seasons) (the same as the present)	DA, RCPC, PENRO, PAO CVIARC, LGU	IPM & INM training
Community plant nursery	Community plant nursery shall be set up to produce seedlings of perennials.	Plant nursery: 0.5ha	DA, RCPC, PENRO, PAO CVIARC, LGU	Plant nursery establishment and Plant propagation training
Food Processing Plan	Epiphany MPCl will start with food processing at the latter half of this term.	Rice-mongo crunch, Corn-mongo crunch, etc.	DOST	Food processing establishment and Food processing training
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extend up to 10% of the paddy. Mung bean will be 1/3 as well.	Rice: 467ha (Wet sea.) 390ha(dry sea.) Hybrid rice: 39ha Mung bean: 130ha	DA, PhilRice RCPC, PAO LGU	
Crop Diversification Plan	44 ha, about 10% of cornfield will be converted into fruit trees, etc. Soil shall be protected from ero- sion at the slope.	Corn: 356ha (both seasons) Gmelina: 25ha, Banana: 12ha Mango: 2ha, Calamansi: 2ha Sweet potato: 3ha	DA, PENRO CVIARC, PAO LGU	Crop diversification training
Tree planting	Trees will be planted at 80 ha of unused land.	Gmelina: 30ha, mahogany: 25ha Narra: 25ha	PENRO, LGU	
Food Processing Plan	Epiphany MPCl continues food processing.	Rice-mongo crunch, Corn-mongo crunch, etc.	DOST	
<Long Term Development Plan>				
Rice Growing Plan	The paddy is increased by new irri- gation system. Hybrid rice will be extended up to 25% of the paddy. Mung bean will be 1/3 of the paddy.	Rice: 512ha (Wet sea.) 435ha(dry sea.) Hybrid rice: 110ha Mung bean: 145ha	DA, PAO, LGU	
Crop Diversification Plan	88 ha, about 20% of cornfield will be converted into fruit trees, etc.	Corn: 312ha (both seasons) Gmelina: 50ha, Banana: 25ha Mango: 5ha, Calamansi: 3ha Sweet potato: 5ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	
Tree planting	Tree planting will be extended up to 163 ha of unused land.	Gmelina: 63ha, mahogany: 50ha Narra: 50ha	PENRO, LGU	
Food Processing Plan	Epiphany MPCl continues food processing.	Rice-mongo crunch, Corn-mongo crunch, etc.	DOST	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	11,094 sq.m	Increasment of selling price of rive and corn	Barangay	
<Medium Term Development Plan>				
Solar Dryer by Barangay	22,187 sq.m	Increasment of selling price of rive and corn	Barangay	
Wear House by Cooperative	240 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	10,011 sq.m			
Mechanical Dryer at Wear House	120 cavan/day			
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				

8. Minagbag ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
<Short Term Development Plan>				
Padapad Communal Irrigation Project	Irrigable Area : 50 ha, Water source : Padapad Creek, Proposed canal length : 0.0 km	Increase of paddy yield	NIA/IA	
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Aggasaid - ISF	3.5 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
Sabado - Rainfed Area	2.0 km	Reducing the hauling cost	LGU	
Minagbag - Magamot CIP	3.5 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>	1.0 km			
Production Road	1.5 km			
Avecilla to NIA canal	1.0 km	Reducing the hauling cost	LGU	
Valdez Rd	1.5 km	Reducing the hauling cost	LGU	
Leal Rd	1.5 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veter-inary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back-yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. and Fish raising training
Mushroom culture		Mushroom will be produced for local market.	RCPC, LGU	Mushroom culture training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	

8. Minagbag ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Fish culture	Continue the development plan.		CVROSFR, LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<Long Term Development Plans>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
H. Environmental Consideration				
	none			

9. Cabaruan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management.	Rice: 183ha (Wet sea.) 153ha(dry sea.) (the same as the present)	DA, PAO LGU	
Corn Growing Plan	Existing private nursery will provide seedlings for crop diversification. Cornfield will be converted into fruit trees at 5%, 16ha. Soil conservation at the slope.	Corn: 400ha (both seasons) Gmelina: 2ha, Banana: 3ha Mango: 3ha, Calamansi: 2ha Guyabano: 2ha, Avocado: 1ha Pomelo: 1ha, Santol: 1ha, Bixa: 1ha	DA, RCPC, PENRO, PAO CVIARC, LGU Soil & Water Management	Crop diversification training and Sloping agriculture training
<Medium Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management will improve yield of rice.	Rice: 183ha (Wet sea.) 153ha(dry sea.)	DA, PAO LGU	
Crop Diversification Plan	32 ha, about 10% of cornfield will be converted into fruit trees, etc.	Corn: 288ha (both seasons) Gmelina: 7ha, Banana: 5ha Mango: 5ha, Calamansi: 5ha Guyabano: 3ha, Avocado: 2ha Pomelo: 2ha, Santol: 1ha, Bixa: 2ha	DA, PENRO CVIARC, PAO LGU	
<Long Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management will improve yield of rice.	Rice: 183ha (Wet sea.) 153ha(dry sea.)	DA, PAO, LGU	
Crop Diversification Plan	64 ha, about 20% of cornfield will be converted into fruit trees, etc.	Corn: 256ha (both seasons) Gmelina: 14ha, Banana: 10ha Mango: 10ha, Calamansi: 10ha Guyabano: 5ha, Avocado: 5ha Pomelo: 3ha, Santol: 2ha, Bixa: 5ha	DA, PENRO, CVIARC, PAO LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		4,935 sq.m	Increase of selling price of rice and corn	Barangay
<Medium Term Development Plan>				
Solar Dryer by Barangay		9,870 sq.m	Increase of selling price of rice and corn	Barangay
Wear House by Cooperative		205 sq.m	Selling rice and corn at high price season	Cooperative
Solar Dryer at Wear House		3,731 sq.m		
Mechanical Dryer at Wear House		50 cavan/day		
<Long Term Development Plan>				
		none		
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<Medium Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<Long Term Development Plan>				
		refer to Tables 6-8-1 & -2		
<b>D. Irrigation Development</b>				
<Short Term Development Plan>				
Caunayan Communal Irrigation Project	Irrigable Area : 150 ha, Water source : Caunayan Creek, Proposed canal length : 17.6 km	Increase of paddy yield	NIA/IA	

9. Cabaruan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<Medium Term Development Plan>				
	none			
<Long Term Development Plan>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Form to Market Road				
Road to Flores	0.7 km	Reducing the hauling cost	LGU	
Production Road				
Road to CIP dam site	3.0 km	Reducing the hauling cost	LGU	
Upto Access Road to Dam site	2.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Form to Market Road				
Road to Manaring	4.0 km	Reducing the hauling cost	LGU	
Production Road				
Road to Quimala	3.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produce for local market.	RCPC, LGU	Mushroom culture training
<Medium Term Development Plan>				
Livestock and poultry development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<Long Term Development Plan>				
Livestock and poultry development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	

9. Cabaruan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
H. Environmental Consideration				
	none			

10. Capirpiriwan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management.	Rice: 102ha (both seasons) (the same as the present)	DA, PAO LGU	
Corn Growing Plan		Corn: 179ha (both seasons) (the same as the present)	DA, RCPC, PENRO, PAO CVIARC, LGU	
Community plant nursery	Community plant nursery will be set up to produce seedlings for crop diversification.	Plant nursery: 0.5ha	DA, RCPC, PENRO, PAO CVIARC, LGU	Plant nursery establishment and Plant propagation technologies
<Medium Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management will improve yield of rice.	Rice: 102ha (both seasons)	DA, PAO LGU	
Crop Diversification Plan	18 ha, about 10% of cornfield will be converted into fruit trees, etc.	Corn: 161ha (both seasons) Gmelina: 5ha, Mahogany: 1ha Banana: 5ha, Mango: 2ha, Calamansi: 2ha, Guyabano: 1ha Cut flowers: 2ha	DA, PENRO CVIARC, PAO LGU Soil & Water Management	Crop diversification training and Sloping agriculture training
<Long Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management will improve yield of rice.	Rice: 102ha (both seasons)	DA, PAO LGU	
Crop Diversification Plan	36 ha, about 20% of cornfield will be converted into fruit trees, etc.	Corn: 143ha (both seasons) Gmelina: 10ha, Mahogany: 2ha Banana: 10ha, Mango: 3ha, Calamansi: 3ha, Guyabano: 3ha Cut flowers: 5ha	DA, PENRO CVIARC, PAO LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		2,360 sq.m	Increase of selling price of rice and corn	Barangay
<Medium Term Development Plan>				
Solar Dryer by Barangay		4,719 sq.m	Increase of selling price of rice and corn	Barangay
Wear House by Cooperative		125 sq.m	Selling rice and corn at high price season	Cooperative
Solar Dryer at Wear House		2,326 sq.m		
Mechanical Dryer at Wear House		30 cavan/day		
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
<Short Term Development Plan>				
Capirpiriwan Communal Irrigation Project	Irrigable Area : 140 ha, Water source : Ilot Creek, Proposed canal length : 4.0 km	Increase of paddy yield	NIA/IA	

10. Capirpiriwan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<Medium Term Development Plan>				
	none			
<Long Term Development Plan>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
R 4	0.4 km	Reducing the hauling cost	LGU	
R 5	0.9 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
R 6	3.0 km	Reducing the hauling cost	LGU	
R 11	1.5 km	Reducing the hauling cost	LGU	
R 8	1.8 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
Production Road				
R 6	2.0 km	Reducing the hauling cost	LGU	
R 7	2.0 km	Reducing the hauling cost	LGU	
R 2	4.2 km	Reducing the hauling cost	LGU	
R 10	2.5 km	Reducing the hauling cost	LGU	
R 9	0.8 km	Reducing the hauling cost	LGU	
R 3	0.4 km	Reducing the hauling cost	LGU	
R 12	0.3 km	Reducing the hauling cost	LGU	
R 1	4.0 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back- yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produce for local market.	RCPC, LGU	Mushroom culture training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<Long Term Development Plan>				



10. Capirpiriwan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
H. Environmental Consideration				
	none			

11. Fermelyd ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Corn growing Crop Diversification Plan	IPM & INM will be demonstrated. Mung bean will be grown before tobacco at 50% of tobacco. Crop diversification will be started at 15ha, about 5% of the cornfield.	Corn: 282ha (both seasons) Tobacco: 94ha(same as the present) Mung bean: 47ha Banana: 5ha, Peanut: 5ha, Water melon: 3ha, Egg plant: 1ha String bean: 1ha	DA, RCPC CVIARC PAO, LGU	IPM & INM training, Mung bean introduction and Crop diversification training
<Medium Term Development Plan>				
Crop Diversification Plan	Mung bean will be grown before tobacco at 50% of tobacco. Crop diversification will be extended to 30ha, about 10% of cornfield.	Corn: 276ha (both seasons) Tobacco: 94ha(same as the present) Mung bean: 47ha Banana: 10ha, Peanut: 10ha Water melon: 5ha, Egg plant: 3ha String bean: 2ha	DA, RCPC CVIARC PAO, LGU	
<Long Term Development Plan>				
Crop Diversification Plan	Mung bean will be grown before tobacco at 50% of tobacco. Crop diversification will be extended to 30ha, about 10% of cornfield.	Corn: 245ha (both seasons) Tobacco: 94ha(same as the present) Mung bean: 47ha Banana: 21ha, Peanut: 20ha Water melon: 10ha, Egg plant: 5ha String bean: 5ha	DA, RCPC CVIARC PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	948 sq.m	Increasment of selling price of rive and corn	Barangay	
<Medium Term Development Plan>				
Solar Dryer by Barangay	1,896 sq.m	Increasment of selling price of rive and corn	Barangay	
Wear House by Cooperative	145 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	1,432 sq.m			
Mechanical Dryer at Wear House	20 cavan/day			
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Fermelyd - Santa	2.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
	none			
<Long Term Development Plan>				
	none			

11. Fermaldy ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back- yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	none			

12. Luzon ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean 1/3.	Rice: 415ha (both seasons) (the same as the present) Hybrid rice: 20ha Mung bean: 140ha	DA, PhilRice, RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
Crop Diversification Plan	Crop diversification will be started at about 5% of the cornfield.	Corn: 26ha (both seasons) Peanut: 1ha, Egg plant: 0.5ha String bean: 0.5ha	DA, CVIARC, PAO, LGU	Crop diversification training
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 415ha (both seasons) Hybrid rice: 42ha Mung bean: 140ha	DA, PhilRice, RCPC, PAO, LGU	
Crop Diversification Plan	Corn will be converted into vegetables at about 10% of cornfield.	Corn: 25ha (both seasons) Peanut: 2ha, Egg plant: 0.5ha String bean: 0.5ha	DA, CVIARC, PAO, LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended up to 25% of the paddy.	Rice: 415ha (both seasons) Hybrid rice: 104ha Mung bean: 140ha	DA, PhilRice, RCPC, PAO LGU	
Crop Diversification Plan	Crop diversification will be further extended up to 20% of cornfield.	Corn: 21ha (both seasons) Peanut: 5ha, Egg plant: 1ha String bean: 1ha	DA, CVIARC, PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	8,664 sq.m	Increasment of selling price of rive and corn	Barangay	
MMP by Barangay	4,000 sq.m	Increasment of selling price of rive and corn	Barangay	
<Medium Term Development Plan>				
Solar Dryer by Barangay	17,329 sq.m	Increasment of selling price of rive and corn	Barangay	
Wear House by Cooperative	265 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	7,399 sq.m			
Mechanical Dryer at Wear House	90 cavan/day			
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Farm to Market Road	0.6 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
	none			

12. Luzon ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<Long Term Development Plan>				
	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	none			

13. Progreso ARC					
Component	Description	Outputs/Returns	Agency	Conditions to be implemented	
<b>A. Agricultural Development Plan</b>					
<Short Term Development Plan>					
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management will improve yield of rice.	Rice: 87ha (both seasons) (the same as the present)	DA, PAO, LGU		
Community plant nursery	Community plant nursery shall be established to produce seedlings of perennials.	Corn: 137ha (both seasons) (the same as the present) Plant nursery: 0.5ha	DA, RCPC, PENRO, PAO CVIARC, LGU	Plant nursery establishment Plant propagation training	
Livestock Development Plan	Cattle fattening will start at 5 hds/ farmer by 10 farmers.	Pasture: 10ha Cattle: 50 heads	Veterinary off. CVUPROS, LGU	Cattle raising training Inoculation Artificial insemination	
<Medium Term Development Plan>					
Rice Growing Plan	Rice growing will be held as it is.	Rice: 87ha (both seasons)	DA, PAO LGU		
Crop Diversification Plan	14 ha, about 10% of cornfield will be converted into perennials. Soil shall be protected from erosion at the slope.	Corn: 123ha (both seasons) Gmelina: 5ha, Mahogany: 2ha, Banana: 7ha	DA, PENRO CVIARC, PAO Soil & Water Management, LGU	Crop diversification training and Sloping agriculture training	
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 10 farmers.	Pasture: 20ha, Cattle: 100 heads	Veterinary off. CVUPROS, LGU	Inoculation and Artificial insemination	
<Long Term Development Plan>					
Rice Growing Plan	Rice growing will be held as it is.	Rice: 87ha (both seasons)	DA, PAO, LGU		
Crop Diversification Plan	28 ha, 20% of cornfield will be converted into perennials.	Corn: 109ha (both seasons) Gmelina: 10ha, Mahogany: 5ha Banana: 13ha,	DA, PENRO, CVIARC, PAO, LGU		
Livestock Development Plan	Cattle will be fattened at 10 hds/ farmer by 20 farmers.	Pasture: 40ha Cattle: 200 heads	Veterinary off. CVUPROS, LGU	Inoculation Artificial insemination	
<b>B. Post Harvest Facility Development Plan</b>					
<Short Term Development Plan>					
Solar Dryer by Barangay		1,325 sq.m	Increasment of selling price of rive and corn	Barangay	
<Medium Term Development Plan>					
Solar Dryer by Barangay		1,325 sq.m	Increasment of selling price of rive and corn	Barangay	
Wear House by Cooperative		90 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House		1,321 sq.m			
Mechanical Dryer at Wear House		20 cavan/day			
<Long Term Development Plan>					
Solar Dryer by Barangay		2,651 sq.m	Increasment of selling price of rive and corn	Barangay	
<b>C. Farmers Organisation Development Plan</b>					
<Short Term Development Plan>					
	refer to Tables 6-8-1 & -2				
<Medium Term Development Plan>					
	refer to Tables 6-8-1 & -2				
<Long Term Development Plan>					
	refer to Tables 6-8-1 & -2				
<b>D. Irrigation Development</b>					
	none				
<b>E. Farm-to-Market Road Development</b>					
<Short Term Development Plan>					
Form to Market Road					

13. Progreso ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Progress - Villa Sanchez	5.0 km	Reducing the hauling cost	LGU	
River Crossing	1.0 unit			
<Medium Term Development Plan>				
Form to Market Road				
Progress - Villa Sanchez	5.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
Form to Market Road				
Progress - Villa Sanchez	5.0 km	Reducing the hauling cost	LGU	
Production Road				
Progress - Rogos	5.0 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back- yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produced for local market.	RCPC, LGU	Mushroom culture training
Simple Food Processing	RIC will implement the project.	Products will be consumed locally and sold at local market.	NGO, DOST	Food processing training
<Medium Term Development Plan>				
Backyard gardening	Continue the project.	Women will grow vege. at the back yard mainly for home consumption.	LGU	
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSFR	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	
Simple Food Processing	Continue the project.	Products will be consumed locally and sold at local market.	DOST	
<Long Term Development Plan>				
Backyard gardening	Continue the project.	Women will grow vege. at the back yard mainly for home consumption.	LGU	
Fish culture	Continue the project.	Telapia will be produced for local people.	CVROSFR	
Mushroom culture	Continue the project.	Mushroom will be produced for local market.	RCPC, LGU	
Simple Food Processing	Continue the project.	Products will be consumed locally and sold at local market.	DOST	
<b>H. Environmental Consideration</b>				
	none			

14. Yeban Nort / Benito Soliven ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management will improve yield of rice.	Rice: 116ha (Wet sea.) 48ha(dry sea.) (the same as the present)	DA,PAO, LGU	
Corn Growing Plan	IPM & INM training will be held at demo farm.	Corn: 936ha (both seasons) (the same as the present)	DA, RCPC, PENRO, PAO, CVIARC, LGU	IPM & INM training Plant nursery establishment Plant propagation training
Community plant nursery	Community plant nursery shall be set up to produce seedlings of perennials.	Plant nursery: 0.5ha		
<Medium Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 116ha (Wet sea.) 48ha(dry sea.)	DA,PAO, LGU	
Crop Diversification Plan	93 ha, 10% of cornfield will be converted into fruit trees, etc. Soil shall be protected from erosion at the slope.	Corn: 843ha (both seasons) Gmelina: 25ha, Mahogany: 5ha Banana: 23ha, Mango: 5ha Black pepper: 25ha, Avocado: 5ha Calamansi: 5ha	DA, PENRO, CVIARC, PAO, Soil & Water Management, LGU	Crop diversification training Sloping agriculture training
<Long Term Development Plan>				
Rice Growing Plan	Rice growing will be held as it is.	Rice: 116ha (Wet sea.) 48ha(dry sea.)	DA,PAO, LGU	
Crop Diversification Plan	186 ha, 20% of cornfield will be converted into fruit trees, etc.	Corn: 750ha (both seasons) Gmelina: 50ha, Mahogany: 10ha Banana: 46ha, Mango: 10ha Black pepper: 50ha, Avocado: 10ha Calamansi: 10ha	DA, PENRO, CVIARC, PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	5,914 sq.m	Increment of selling price of rive and corn	Barangay	
<Medium Term Development Plan>				
Solar Dryer by Barangay	11,828 sq.m	Increment of selling price of rive and corn	Barangay	
<Long Term Development Plan>				
Wear House by Cooperative	230 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	2,542 sq.m			
Mechanical Dryer at Wear House	60 cavan/day			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				



14. Yeban Nort / Benito Soliven ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Production Road				
Road in Yeban Norte	5.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
Yeban N - Gayong	2.0 km	Reducing the hauling cost	LGU	
Yeban N - Sunlife	3.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
Production Road				
Yeban N - Punit	2.0 km	Reducing the hauling cost	LGU	
Yeban N - Surcoc	1.5 km	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produce for local market.	RCPC, LGU	Mushroom culture training
<Medium Term Development Plan>				
Livestock and poultry development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<Long Term Development Plan>				
Livestock and poultry development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<b>H. Environmental Consideration</b>				
	none			

15. Canan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean will be 1/3 of the paddy.	Rice: 678ha (both seasons) (the same as the present) Hybrid rice: 34ha Mung bean: 226ha	DA, PhilRice, RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 678ha (both seasons) Hybrid rice: 68ha Mung bean: 226ha	DA, PhilRice, RCPC, PAO LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 25% of the paddy.	Rice: 678ha (both seasons) Hybrid rice: 170ha Mung bean: 226ha	DA, PhilRice, RCPC, PAO LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	13,990 sq.m	Increasment of selling price of rive and corn	Barangay	
MPP by Barangay	5,840 sq.m	Increasment of selling price of rive and corn	Barangay	
Wear House by Cooperative	205 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	11,887 sq.m			
Mechanical Dryer at Wear House	50 cavan/day			
<Medium Term Development Plan>				
Solar Dryer by Barangay	27,980 sq.m	Increasment of selling price of rive and corn	Barangay	
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 &-2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 &-2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 &-2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Farm to Market Road	5.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
	none			
<Long Term Development Plan>				
	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				

15. Canan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR project Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	none			

16. Andarayan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean 1/3.	Rice: 315ha (both seasons) (the same as the present) Hybrid rice: 16ha Mung bean: 105ha	DA, PhilRice, RPCP, PAO LGU	RTV training Hybrid rice training and mung bean introduction
Crop Diversification Plan	Crop diversification will be started at about 5% of the cornfield.	Corn: 14ha (both seasons) Egg plant: 0.5ha, Bitter gourd: 0.5ha	DA, CVIARC, PAO, LGU	Crop diversification training
Food Processing Plan	CAS MPCl will start with food processing at the latter half of this term.	Rice-mongo crunch, Corn-mongo crunch, etc.	DOST	Food processing establishment Food processing training
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 315ha (both seasons) Hybrid rice: 32ha Mung bean: 105ha	DA, PhilRice, RPCP, PAO LGU	
Crop Diversification Plan	Corn will be converted into vegetables at about 10% of cornfield.	Corn: 13ha (both seasons) Egg plant: 1ha, Bitter gourd: 1ha	DA, CVIARC, PAO, LGU	
Food Processing Plan	CAS MPCl continues food processing.	Rice-mongo crunch, Corn-mongo crunch, etc.	DOST	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended up to about 25% of the paddy.	Rice: 315ha (both seasons) Hybrid rice: 80ha Mung bean: 105ha	DA, PhilRice, RPCP, PAO LGU	
Crop Diversification Plan	Crop diversification will be further extended up to 20% of cornfield.	Corn: 12ha (both seasons) Egg plant: 2ha, Bitter gourd: 1ha	DA, CVIARC, PAO, LGU	
Food Processing Plan	CAS MPCl continues food processing.	Rice-mongo crunch, Corn-mongo crunch, etc.	DOST	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	6,992 sq.m	Increase of selling price of rice and corn	Barangay	
MPP by Barangay	2,000 sq.m	Increase of selling price of rice and corn	Barangay	
Wear House by Cooperative	205 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	5,593 sq.m			
Mechanical Dryer at Wear House	70 cavan/day			
<Medium Term Development Plan>				
Solar Dryer by Barangay	13,984 sq.m	Increase of selling price of rice and corn	Barangay	
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				

16. Andarayan ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
	refer to Tables 6-8-1 & -2			
<Short Term Development Plan>				
Andarayan Communal Irrigation Project	Irrigable Area : 340 ha, Water source : Cagayan River, Proposed canal length : 17.0 km	Increase of paddy yield	NIA/IA	
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Rehab. of FTMD	0.3 km	Reducing the hauling cost	LGU	
Re-Const. of FTMD	6.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back- yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	none			

17. Bantug Petines ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean will be 1/3 of the paddy.	Rice: 444ha (both seasons) (the same as the present) Hybrid rice: 22ha Mung bean: 150ha	DA, PhilRice RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 444ha (both seasons) Hybrid rice: 44ha Mung bean: 150ha	DA, PhilRice, RCPC, PAO LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 25% of the paddy.	Rice: 444ha (both seasons) Hybrid rice: 111ha Mung bean: 150ha	DA, PhilRice, RCPC, PAO LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	10,031 sq.m	Increasment of selling price of rive and corn	Barangay	
MPP by Barangay	1,200 sq.m	Increasment of selling price of rive and corn	Barangay	
Wear House by Cooperative	275 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	7,784 sq.m			
Mechanical Dryer at Wear House	90 cavan/day			
<Medium Term Development Plan>				
Solar Dryer by Barangay	20,061 sq.m	Increasment of selling price of rive and corn	Barangay	
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
Re-Const. of FTMD	5.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
	none			
<Long Term Development Plan>				
	none			

17. Bantug Petines ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR	
<b>H. Environmental Consideration</b>				
	none			

18. Dalena & Simanu ARC					
Component	Description	Outputs/Returns	Agency	Conditions to be implemented	
<b>A. Agricultural Development Plan</b>					
<Short Term Development Plan>					
Rice Growing Plan	Rice growing will be held as it is. New cultivars, nutrition management will improve yield of rice.	Rice: 411ha (Wet sea.)287ha(dry sea.) (the same as the present)	DA,PAO LGU		
Corn Growing Plan	IPM & INM training will be held at demo farm. 30ha, 5% of the cornfield will be converted into fruit trees, etc.	Corn: 570ha (both seasons) Gmelina: 10ha, Banana: 8ha Mango: 3ha, Avocado: 2ha Peanut: 2ha, Egg plant: 2ha, Water melon: 1ha, Pumpkin: 1ha Bitter gourd: 1ha	DA, RCPC, PENRO, PAO CVIARC, LGU	IPM & INM training Crop diversification training	
<Medium Term Development Plan>					
Rice Growing Plan	Rice growing will be held as it is.	Rice: 411ha (Wet sea.)287ha(dry sea.)	DA,PAO LGU		
Crop Diversification Plan	60 ha, 10% of cornfield will be converted into fruit trees, etc.	Corn: 540ha (both seasons) Gmelina: 20ha, Banana: 15ha Mango: 5ha, Avocado: 5ha Peanut: 5ha, Egg plant:3ha Water melon: 3ha, Pumpkin: 2ha Bitter gourd: 2ha	DA, PENRO CVIARC, PAO LGU		
<Long Term Development Plan>					
Rice Growing Plan	Rice growing will be held as it is.	Rice: 411ha (Wet sea.)287ha(dry sea.)	DA,PAO LGU		
Crop Diversification Plan	120 ha, 20% of cornfield will be converted into fruit trees, etc.	Corn: 480ha (both seasons) Gmelina: 40ha, Banana: 30ha Mango: 10ha, Avocado: 10ha Peanut: 10ha, Eggplant: 5ha Water melon: 5ha, Pumpkin: 5ha Bitter gourd: 5ha	DA, PENRO CVIARC, PAO LGU		
<b>B. Post Harvest Facility Development Plan</b>					
<Short Term Development Plan>					
Solar Dryer by Barangay		5,163 sq.m	Increment of selling price of rive and corn	Barangay	
<Medium Term Development Plan>					
Solar Dryer by Barangay		5,163 sq.m	Increment of selling price of rive and corn	Barangay	
<Long Term Development Plan>					
Solar Dryer by Barangay		10,327 sq.m	Increment of selling price of rive and corn	Barangay	
Wear House by Cooperative		140 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House		2,002 sq.m			
Mechanical Dryer at Wear House		70 cavan/day			
<b>C. Farmers Organisation Development Plan</b>					
<Short Term Development Plan>					
		refer to Tables 6-8-1 & -2			
<Medium Term Development Plan>					
		refer to Tables 6-8-1 & -2			
<Long Term Development Plan>					
		refer to Tables 6-8-1 & -2			
<b>D. Irrigation Development</b>					
<Short Term Development Plan>					
		none			
<Medium Term Development Plan>					



18. Dalena & Simanu ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Rehabilitation of Simanu Communal Irrigation Project	Irrigable Area : 170 ha, Water source : Simanu River, Proposed canal length : 5.8 km	Increase of paddy yield	NIA/IA	
<Long Term Development Plan>	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
San Pabro - Dalena	6.5 km	Reducing the hauling cost	LGU	
Simanu N - Highway	4.0 km	Reducing the hauling cost	LGU	
Simanu S - junction of N. R.	3.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
Dalena - San Vicente	4.0 km	Reducing the hauling cost	LGU	
Simanu N - Nagbaraalau	3.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
Production Road				
Simanu N - Corn Farm	5.0 km	Reducing the hauling cost	LGU	
Bridge	1 unit	Reducing the hauling cost	LGU	
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>	refer to section 6-3-1			
<Medium Term Development Plan>	refer to section 6-3-1			
<Long Term Development Plan>	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back-yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
Mushroom culture		Mushroom will be produce for local market.	RCPC, LGU	Mushroom culture training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
Mushroom culture	Continue the development plan.		RCPC, LGU	
<b>H. Environmental Consideration</b>				

18. Dalena & Simanu ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
	none			

19. Dammao ARC					
Component	Description	Outputs/Returns	Agency	Conditions to be implemented	
<b>A. Agricultural Development Plan</b>					
<Short Term Development Plan>					
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean will be 1/3 of the paddy. Pump irrigation system will be constructed.	Rice: 105ha (both seasons) Hybrid rice: 5ha Mung bean: 35ha	DA, PhilRice RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction	
<Medium Term Development Plan>					
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 167ha (both seasons) (increase 62ha by irrigation system) Hybrid rice: 17ha Mung bean: 56ha	DA, PhilRice RCPC, PAO, LGU		
<Long Term Development Plan>					
Rice Growing Plan	Hybrid rice will be extended to 25% of the paddy.	Rice: 167ha (both seasons) Hybrid rice: 42ha Mung bean: 56ha	DA, PhilRice RCPC, PAO LGU		
<b>B. Post Harvest Facility Development Plan</b>					
<Short Term Development Plan>					
Solar Dryer by Barangay		2,964 sq.m	Increase of selling price of rice and corn	Barangay	
Wear House by Cooperative		95 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House		2,440 sq.m			
Mechanical Dryer at Wear House		30 cavan/day			
<Medium Term Development Plan>					
Solar Dryer by Barangay		5,929 sq.m	Increase of selling price of rice and corn	Barangay	
<Long Term Development Plan>					
		none			
<b>C. Farmers Organisation Development Plan</b>					
<Short Term Development Plan>					
	refer to Table-6-8-1 & -2				
<Medium Term Development Plan>					
	refer to Table-6-8-1 & -2				
<Long Term Development Plan>					
	refer to Table-6-8-1 & -2				
<b>D. Irrigation Development</b>					
<Short Term Development Plan>					
Dammao Communal Oump Irrigation Project	Irrigable Area : 167 ha, Water source : Cagayan River, Proposed canal length : 5.0 km	Increase of paddy yield	NIA/IA		
<Medium Term Development Plan>					
	none				
<Long Term Development Plan>					
	none				
<b>E. Farm-to-Market Road Development</b>					
<Short Term Development Plan>					

19. Damiao ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
Production Road				
Damiao - Main Canal	1.0 km	Reducing the hauling cost	LGU	
Main Canal - Farm	1.0 km	Reducing the hauling cost	LGU	
Damiao - Farm	0.9 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>	none			
<Long Term Development Plan>	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>	refer to section 6-3-1			
<Medium Term Development Plan>	refer to section 6-3-1			
<Long Term Development Plan>	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	non			

20. San Miguel (Burgos) ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean 1/3.	Rice: 260ha (both seasons) (the same as the present) Hybrid rice: 13ha Mung bean: 87ha	DA, PhilRice RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
Crop Diversification Plan	Crop diversification will be started at about 5% of the cornfield.	Corn: 312ha (both seasons) Calamansi: 5ha, Banana: 5ha Mango: 2ha, Egg plant: 1ha Peanut: 1ha, Water melon: 0.5ha String bean: 0.5ha, Bitter gourd: 0.5ha Pumpkin: 0.5ha	DA, CVIARC PAO, LGU	Crop diversification training
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 260ha (both seasons) Hybrid rice: 26ha Mung bean: 87ha	DA, PhilRice RCPC, PAO LGU	
Crop Diversification Plan	Corn will be converted into vegetables and fruit trees at about 10% of the cornfield.	Corn: 295ha (both seasons) Calamansi: 10ha, Banana: 10ha Mango: 5ha, Egg plant: 2ha Peanut: 2ha, Water melon: 1ha String bean: 1ha, Bitter gourd: 1ha Pumpkin: 1ha	DA, CVIARC PAO, LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended up to about 25% of the paddy.	Rice: 260ha (both seasons) Hybrid rice: 65ha Mung bean: 87ha	DA, PhilRice RCPC, PAO LGU	
Crop Diversification Plan	Crop diversification will be further extended up to 20% of cornfield.	Corn: 260ha (both seasons) Calamansi: 20ha, Banana: 20ha Mango: 10ha, Egg plant: 5ha Peanut: 5ha, Water melon: 2ha String bean: 2ha, Bitter gourd: 2ha Pumpkin: 2ha	DA, CVIARC PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	5,998 sq.m	Increase of selling price of rice and corn	Barangay	
<Medium Term Development Plan>				
Solar Dryer by Barangay	11,995 sq.m	Increase of selling price of rice and corn	Barangay	
Wear House by Cooperative	245 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	4558 sq.m			
Mechanical Dryer at Wear House	60 cavan/day			
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Table 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Table 6-8-1 & -2			
<Long Term Development Plan>				

20. San Miguel (Burgos) ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
	refer to Table 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
San Miguel - Catabban	4.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
San Miguel - Divisoria	3.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>				
	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>				
	refer to section 6-3-1			
<Medium Term Development Plan>				
	refer to section 6-3-1			
<Long Term Development Plan>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	non			

21. San Raman ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Rice Growing Plan	RTV disease shall be prevented. Hybrid rice will be introduced at 5% of the paddy and mung bean 1/3.	Rice: 135ha (both seasons) (the same as the present) Hybrid rice: 7ha Mung bean: 45ha	DA, PhilRice RCPC, PAO LGU	RTV training Hybrid rice training and mung bean introduction
Crop Diversification Plan	Crop diversification will be started at about 5% of the cornfield.	Corn: 82ha (both seasons) Calamansi: 3ha, Egg plant: 1ha Peanut: 0.5ha, Water melon: 0.5ha	DA, CVIARC PAO, LGU	Crop diversification training
<Medium Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended to 10% of the paddy.	Rice: 135ha (both seasons) Hybrid rice: 14ha Mung bean: 45ha	DA, PhilRice RCPC, PAO LGU	
Crop Diversification Plan	Corn will be converted into vegetables and fruit trees at about 10% of the cornfield.	Corn: 77ha (both seasons) Calamansi: 5ha, Egg plant: 3ha Peanut: 1ha, Water melon: 1ha	DA, CVIARC PAO, LGU	
<Long Term Development Plan>				
Rice Growing Plan	Hybrid rice will be extended up to about 25% of the paddy.	Rice: 135ha (both seasons) Hybrid rice: 34ha Mung bean: 45ha	DA, PhilRice RCPC, PAO LGU	
Crop Diversification Plan	Crop diversification will be further extended up to about 20% of the cornfield.	Corn: 67ha (both seasons) Calamansi: 10ha, Egg plant: 5ha Peanut: 2ha, Water melon: 3ha	DA, CVIARC PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay	4,247 sq.m	Increment of selling price of rice and corn	Barangay	
Wear House by Cooperative	135 sq.m	Selling rice and corn at high price season	Cooperative	After strengthening of Coop
Solar Dryer at Wear House	3,150 sq.m			
Mechanical Dryer at Wear House	40 cavan/day			
<Medium Term Development Plan>				
Solar Dryer by Barangay	8,539 sq.m	Increment of selling price of rice and corn	Barangay	
<Long Term Development Plan>				
	none			
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
	refer to Table 6-8-1 & -2			
<Medium Term Development Plan>				
	refer to Table 6-8-1 & -2			
<Long Term Development Plan>				
	refer to Table 6-8-1 & -2			
<b>D. Irrigation Development</b>				
	none			
<b>E. Farm-to-Market Road Development</b>				

21. San Raman ARC				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>&lt;Short Term Development Plan&gt;</b>				
Production Road				
Rehab of Tao Tao Road	1.5 km	Reducing the hauling cost	LGU	
Bridge on Tao Tao River	1 unit	Reducing the hauling cost	LGU	
San Ramon - San Ratael	1.0 km	Reducing the hauling cost	LGU	
<b>&lt;Medium Term Development Plan&gt;</b>				
Production Road				
San Ramon - San Andres	1.0 km	Reducing the hauling cost	LGU	
San Ramon - San Apiat	1.0 km	Reducing the hauling cost	LGU	
<b>&lt;Long Term Development Plan&gt;</b>				
	none			
<b>F. Rural Credit Plan</b>				
<b>&lt;Short Term Development Plan&gt;</b>				
	refer to section 6-3-1			
<b>&lt;Medium Term Development Plan&gt;</b>				
	refer to section 6-3-1			
<b>&lt;Long Term Development Plan&gt;</b>				
	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<b>&lt;Short Term Development Plan&gt;</b>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<b>&lt;Medium Term Development Plan&gt;</b>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
<b>&lt;Long Term Development Plan&gt;</b>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
<b>H. Environmental Consideration</b>				
	non			



22. Viola Estate Cluster				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<b>A. Agricultural Development Plan</b>				
<Short Term Development Plan>				
Corn growing	IPM & INM will be demonstrated.	Corn: 933ha (both seasons) Tobacco: 260ha(same as the present) Mung bean: 130ha Plant nursery: 0.5ha	DA, RCPC CVIARC PAO, LGU	IPM & INM training Mung bean introduction Plant nursery establishment Plant propagation training
Community Plant Nursery	Mung bean will be grown before tobacco at 50% of tobacco. Community plant nursery shall be established to produce seedlings for crop diversification.			
<Medium Term Development Plan>				
Crop Diversification Plan	Mung bean will be grown before tobacco at 50% of tobacco. Crop diversification will be started at about 10% of cornfield.	Corn: 884ha (both seasons) Tobacco: 260ha(same as the present) Mung bean: 130ha Banana: 20ha, Black pepper: 20ha Mango: 10ha, Calamansi: 15ha Santol: 5ha, Guyabano: 5ha Peanut: 10ha, String bean: 5ha Water melon: 5ha, Bitter gourd: 1ha Red pepper: 1ha, Pumpkin: 1ha	DA, RCPC CVIARC PAO, LGU	Crop diversification training
<Long Term Development Plan>				
Crop Diversification Plan	Mung bean will be grown before tobacco at 50% of tobacco. Crop diversification will be extended up to about 20% of cornfield.	Corn: 785ha (both seasons) Tobacco: 260ha(same as the present) Mung bean: 130ha Banana: 40ha, Black, pepper: 40ha Mango: 20ha, Calamansi: 30ha Santol: 10ha, Guyabano: 10ha Peanut: 20ha, String bean: 10ha Water melon: 10ha, Bitter gourd: 2ha Red pepper: 3ha, Pumpkin: 2ha	DA, RCPC CVIARC PAO, LGU	
<b>B. Post Harvest Facility Development Plan</b>				
<Short Term Development Plan>				
Solar Dryer by Barangay		4,247 sq.m	Increasment of selling price of rive and corn	Barangay
<Medium Term Development Plan>				
Solar Dryer by Barangay		8,493 sq.m	Increasment of selling price of rive and corn	Barangay
Wear House by Cooperative		120 sq.m	Selling rice and corn at high price season	Cooperative
Solar Dryer at Wear House		1,147 sq.m		After strengthening of Coop
Mechanical Dryer at Wear House		60 cavan/day		
<Long Term Development Plan>				
		none		
<b>C. Farmers Organisation Development Plan</b>				
<Short Term Development Plan>				
		refer to Table 6-8-1 & -2		
<Medium Term Development Plan>				
		refer to Table 6-8-1 & -2		
<Long Term Development Plan>				
		refer to Table 6-8-1 & 2		
<b>D. Irrigation Development</b>				

22. Viola Estate Cluster				
Component	Description	Outputs/Returns	Agency	Conditions to be implemented
<Short Term Development Plan>	none			
<b>E. Farm-to-Market Road Development</b>				
<Short Term Development Plan>				
Production Road				
FTMR to San Rouque	4.0 km	Reducing the hauling cost	LGU	
Banquero - Highway	3.0 km	Reducing the hauling cost	LGU	
Bridge	1 unit	Reducing the hauling cost	LGU	
Sallucong - Santiago	2.0 km	Reducing the hauling cost	LGU	
Baibarsang - Sallucong	1.0 km	Reducing the hauling cost	LGU	
<Medium Term Development Plan>				
Production Road				
FTMR to San Rouque	4.0 km	Reducing the hauling cost	LGU	
Banquero - Santiago	2.0 km	Reducing the hauling cost	LGU	
Baibarsang - Sto Domingo	1.0 km	Reducing the hauling cost	LGU	
<Long Term Development Plan>	none			
<b>F. Rural Credit Plan</b>				
<Short Term Development Plan>	refer to section 6-3-1			
<Medium Term Development Plan>	refer to section 6-3-1			
<Long Term Development Plan>	refer to section 6-3-1			
<b>G. Livelihood Development Plan</b>				
<Short Term Development Plan>				
Livestock and poultry Development	Animal dispersal plan	More farmers will raise animals and local chickens will be improved.	NGO, Veterinary office	Animal raising training Inoculation, Art. insemination
Backyard gardening	A demonstration per purok for 3 years.	Women will grow vege. at the back yard mainly for home consump.	LGU	Demonstration
Fish culture	Fingerling dispersal plan	Telapia will be produced for local people.	NGO, CVROSFR	Location judgement, SFR proj. Fish raising training
<Medium Term Development Plan>				
Livestock and poultry Development	Continue the development plan.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR LGU	
<Long Term Development Plan>				
Livestock and poultry Development	Continue the development plan untill dispered all who want.		Veterinary office, LGU	
Backyard gardening	Continue the development plan.		LGU	
Fish culture	Continue the development plan.		CVROSFR, LGU	
<b>H. Environmental Consideration</b>				
	non			

## 6.7 Implementation and O&M Structures

### 6.7.1 Principles

The implementation and O&M structures for the proposed development plans are proposed with the following principles (refer to [Figure 6.7.1](#)):

- a) Like the current CARP implementation, the DARPO will be the leading agency for the implementation and O&M of the development projects. The DARCO and DARRO will supervise the DARPO.
- b) The Project Management Office (PMO) will be established in the DARPO at the same level as the Beneficiary Development and Coordination Division (BDCD), responsible for the current Program Beneficiary Development (PBD) of the CARP. The PMO will play a key role in the implementation and O&M of the projects.
- c) The PMO will be consisted of the administrative office and eight Project Implementation Units (PIUs). The PIUs will be directly responsible for the implementation of the related projects or provide necessary assistance while the administrative office will facilitate information exchange and coordinate activities among the PIUs.
- d) The PMO will have consultants from outside for necessary technical supports to the staff of the DARPO.
- e) The farmers beneficiaries will actively participate into the implementation with the help of the DFs and other staff of the agencies including LGUs.

The Steering Committee (SC) will be established in the provincial center for the discussion of key issues and the coordination among the related agencies. The SC will review the project plans of each agency and determine the whole implementation plan of each year. Following this decision, the projects will be implemented through the PIUs.

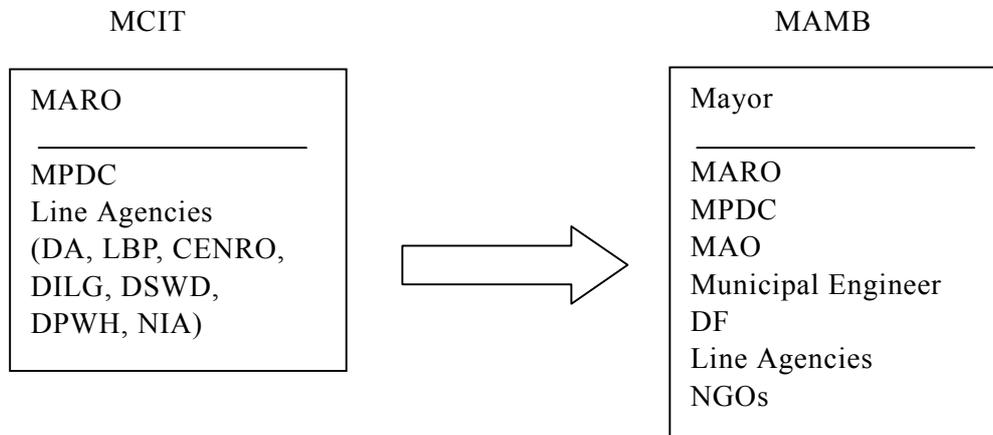
The PMO will closely communicate with the Municipal Agrarian Reform Management Board (MAMB) and the Provincial Agrarian Reform Management Board (PAMB) to make this plan and the local development plans consistent. The PMO will also be responsible for the facilitation of the participation of LGUs in this plan.

The MAMB will be the coordination and monitoring body at the municipal level, to be reorganized from the current Municipal CARP Implementing Team (MCIT), as shown in the figure below<sup>1</sup>. The chairman of the MAMB will be the mayor, and the vice chairman will be the MARO. DF, staff of the related agencies, and representatives of the farmers will be the members of the MCIT. The PAMB will be established in the

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<sup>1</sup> The idea of reorganizing the MCIT to MAMB was already indicated in “Isabela Province Mid-term Agrarian Reform Development Plan” prepared by the DARPO.

province, to manage the issues beyond the capacity of the MAMB. The PAMB will be organized by the governor as the chairman, the Provincial Agrarian Reform Officer (PARO) II as the vice chairman, and other members.



The management capability and suitability of the MAROs are one of the key factors for the MAMB to function well, and to facilitate ARC development smoothly. Another factor is the DFs, who are the frontliners of the CARP contacting the farmers directly and daily. They are required to have knowledge and expertise of community development as the responsible staff for that. The DAR is proposed to have the system of recruiting capable MAROs and DFs and positioning them in the most appropriate places.

The frontliners such as DFs and Municipal Agricultural Technicians, should be highly motivated to work in the field, to activate the supporting services to the beneficiaries. To raise their commitments to the project, this plan includes the system of evaluating the staff's performances and awarding them for their achievements. Concretely, the awards indicated in Table 6-7-1, with the certificate of the PARO II or the governor, will be given to the well-performing organizations and staff. The DARPO will be responsible for the evaluation.

**Table 6-7-1 Awards**

Award Name	Target	Award	Condition	Frequency
1. Active MAMB	Municipal Administration	A vehicle (small jeep) for operation of ARC development	Select one municipality from 19 in the Study Area based on the achievements for ARC development	Once a year (for four years)
2. Strong DARMO	DAR Municipal Office	A vehicle (small jeep) for operation of ARC development	Select one DARMO based on the efficiency of ARC development activities	Once a year (for four years)
3. Capable MARO	MARO	A study tour to a well-progressed rural development project area	Select one MARO based on the his/her performances for ARC development	Once a year (for ten years)
4. Capable DF	DF	A motorcycle (grant or interest-free) for operation of ARC development	Select two DFs based on the his/her performances for ARC development	Once a year (for ten years)
5. Capable AT	AT	A motorcycle (grant or interest-free) for operation of ARC development	Select two ATs based on the his/her performances for ARC development	Once a year (for ten years)

At the Barangay level, the villagers responsible for the management and operation of the projects should have the assembly meetings twice a year with the other beneficiaries or members. The purposes of the meetings are to share the necessary information and discuss on operational policies and financial statement among the members. In stead, the responsible villagers should be paid. That budget could be born from a new system such that the use of the Barangay facilities is charged.

### **6.7.2 Implementation and O&M Structures for the Development Plans**

As per the implementation and O&M for the proposed development plans, the flows of the activities and roles of the related agencies/beneficiaries are shown in Figure 6-7-1 to 6-7-12 respectively. In principle, all the plans will require that the Barangay

Council discuss development ideas of the year first, with the help of DF and other agencies' staff. The results of the discussion will be incorporated into the Barangay Development Plan (BDP), which will be sent to the respective municipality to be included in the Municipal Development Plan (MDP). The BDP will then be sent to the DARPO for its endorsement. The following activities are as shown in the figures.

The implementation and O&M structures for the plans that include the construction of infrastructures are as follows:

The irrigation facilities will be constructed by private contractors, and the irrigators associations (IAs) will supervise the construction with the help of NIA or PIU. The regular maintenance of the facilities, such as weeding, minor repair of canals, water management, etc., will be taken care by the IAs. The IAs will also be responsible for the collection of irrigation fees from the members. As it was mentioned previously, the beneficiaries of the plan should understand and agree to pay irrigation fees, and then establish the IAs prior to the construction.

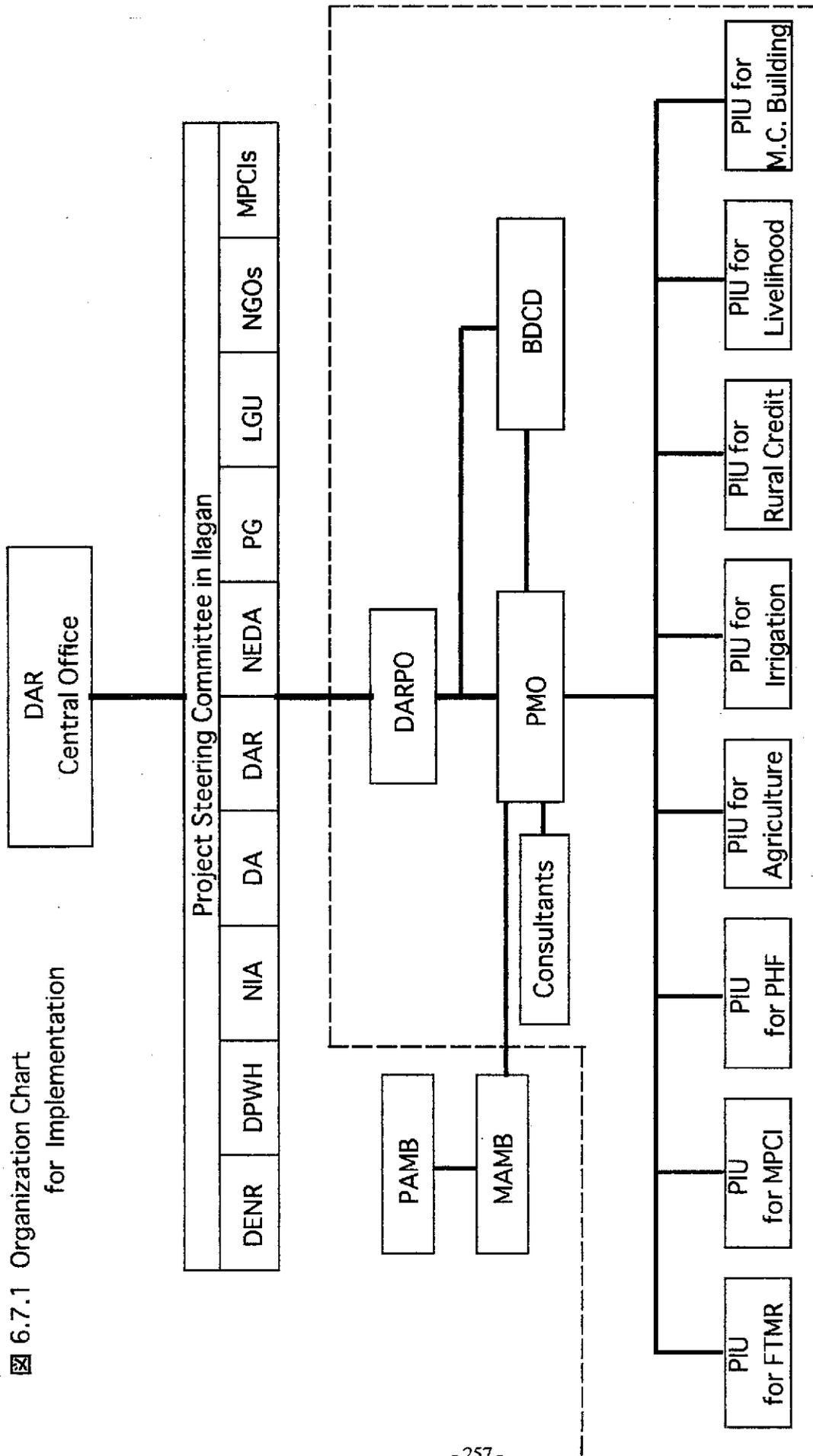
The farm-to-market roads will be constructed by LGUs in collaboration of PIU<sup>2</sup>, and the Barangays and DFs will supervise the construction. The roads will be paved simply with gravel, and LGUs' technicians are able to manage it. The LGUs and PIU will also be responsible for land acquisition necessary for the construction. For the construction of bridges and culverts that require relatively high skills, the Provincial Engineering Office will support the LGUs and PIU. The Barangays will be responsible for minor repair of the roads while the LGUs will take care of major maintenance.

Regarding the post-harvest facilities, the Barangay will be responsible for land acquisition and construction of solar dryers, with the help of the LGUs and PIU. The Barangays will also be responsible for O&M of solar dryers. The warehouses (mechanical and solar dryers combined) will be constructed only after the MPCIs, responsible for O&M, is assessed to become capable. The construction will be done by private contractors, and the MPCIs will supervise it with the technical assistance of the LGUs and PIU.

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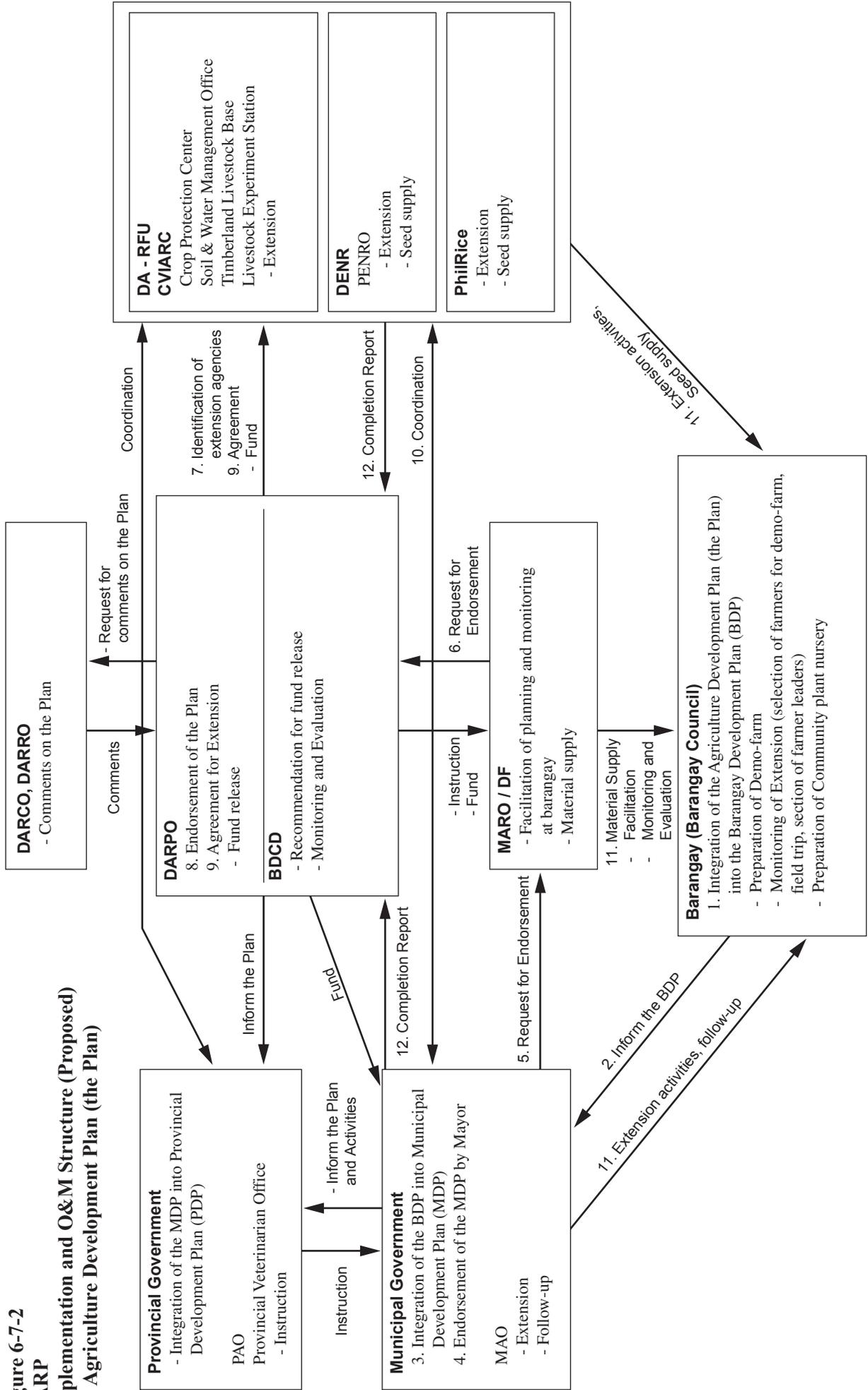
<sup>2</sup> The construction might be done by private contractors in some municipalities.

6.7.1 Organization Chart for Implementation



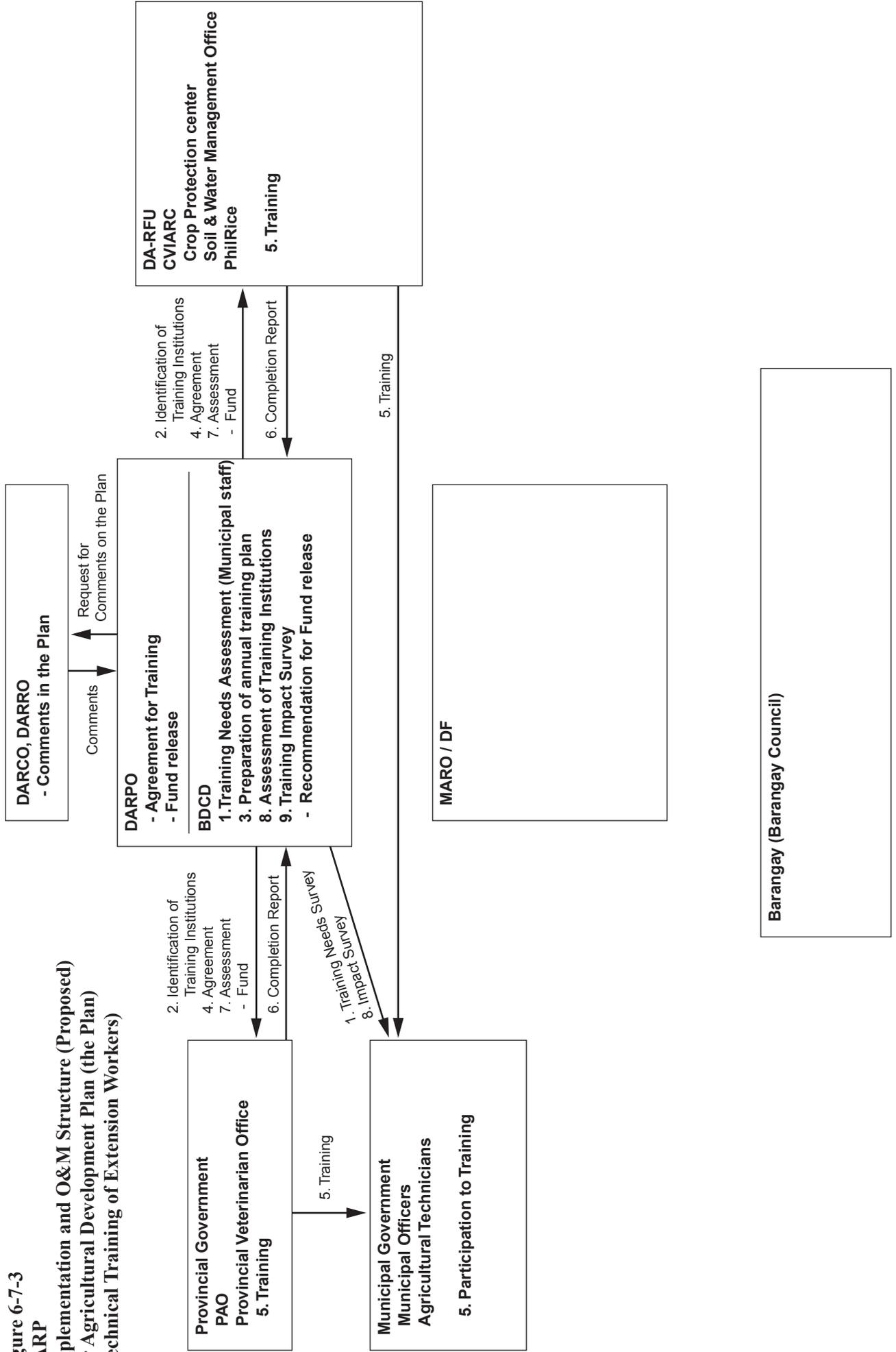
Note: PMO - Project Management Office    MAMB - Municipal Agrarian Reform Management Board    BDCD - Beneficiaries Development and Coordination Division  
 PIU - Project Implementation Unit    PAMB - Provincial Agrarian Reform Management Board    DARPO - Department of Agrarian Reform Provincial Office  
 PHF - Post Harvest Facilities    M.C. Building - Management Capacity Building  
 FTMR - Farm to Market Road    MPCI - Multi-Purpose Cooperative Inc.

**Figure 6-7-2**  
**CARP**  
**Implementation and O&M Structure (Proposed)**  
**for Agriculture Development Plan (the Plan)**

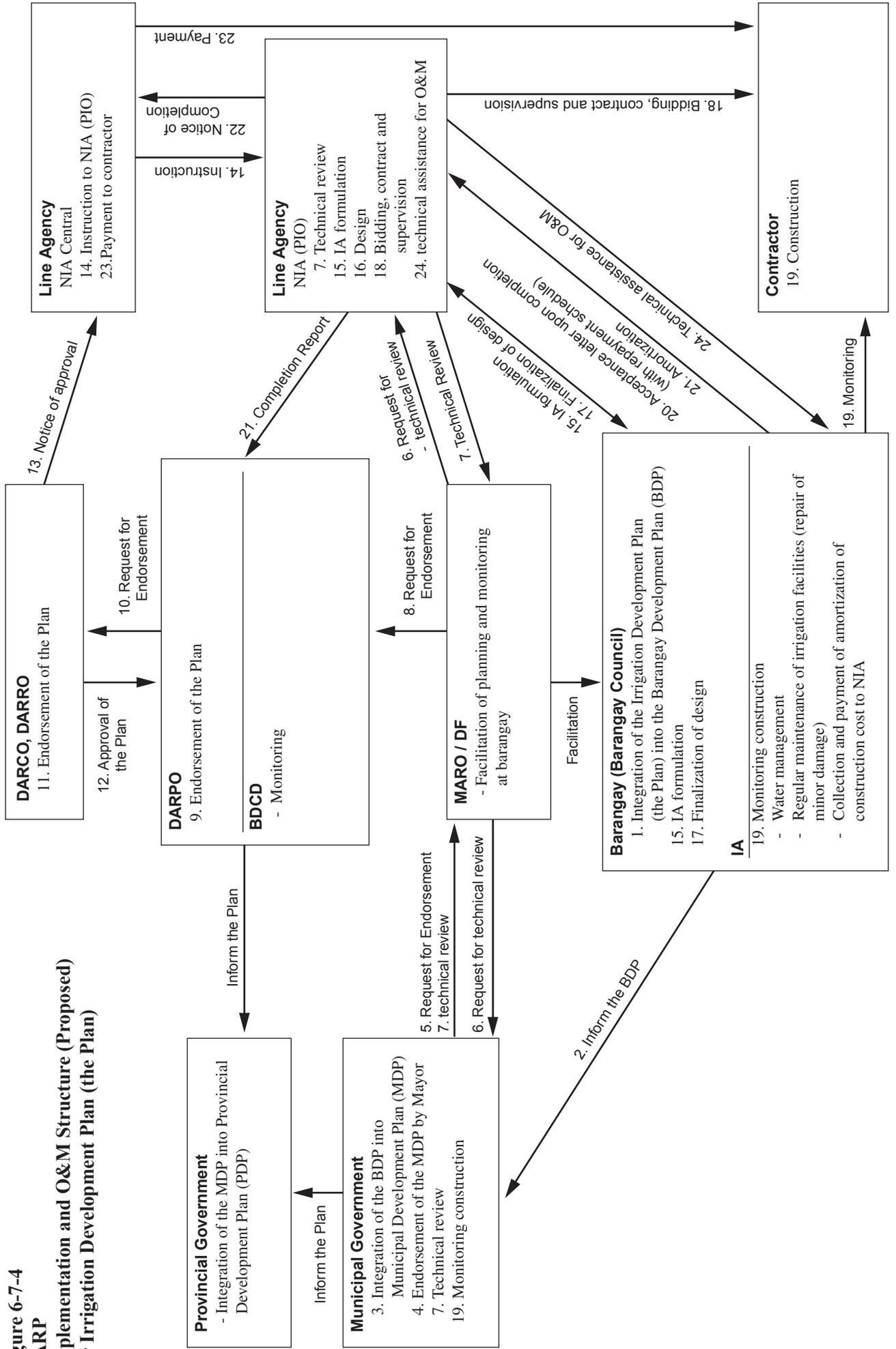




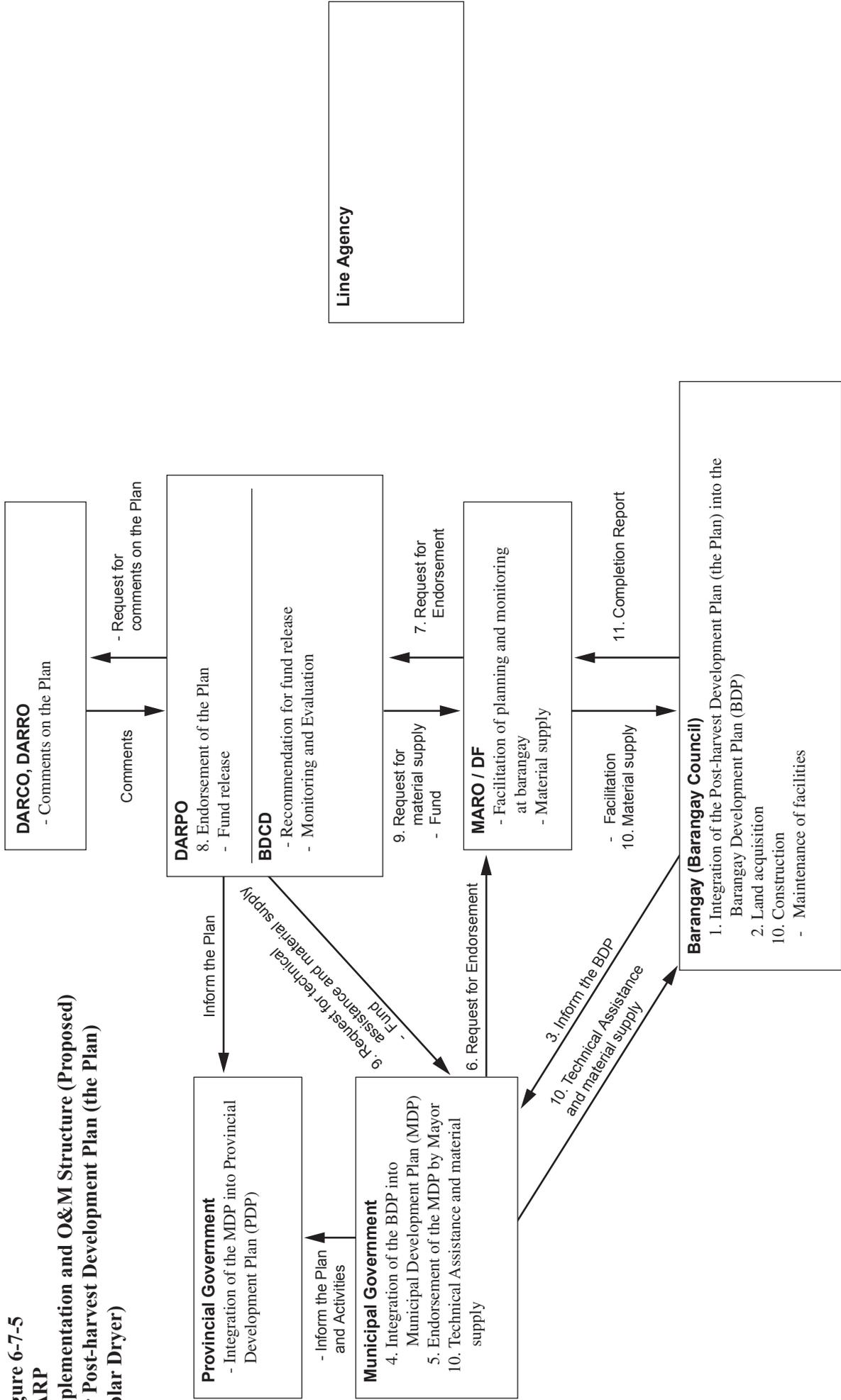
**Figure 6-7-3**  
**CARP**  
**Implementation and O&M Structure (Proposed)**  
**for Agricultural Development Plan (the Plan)**  
**(Technical Training of Extension Workers)**



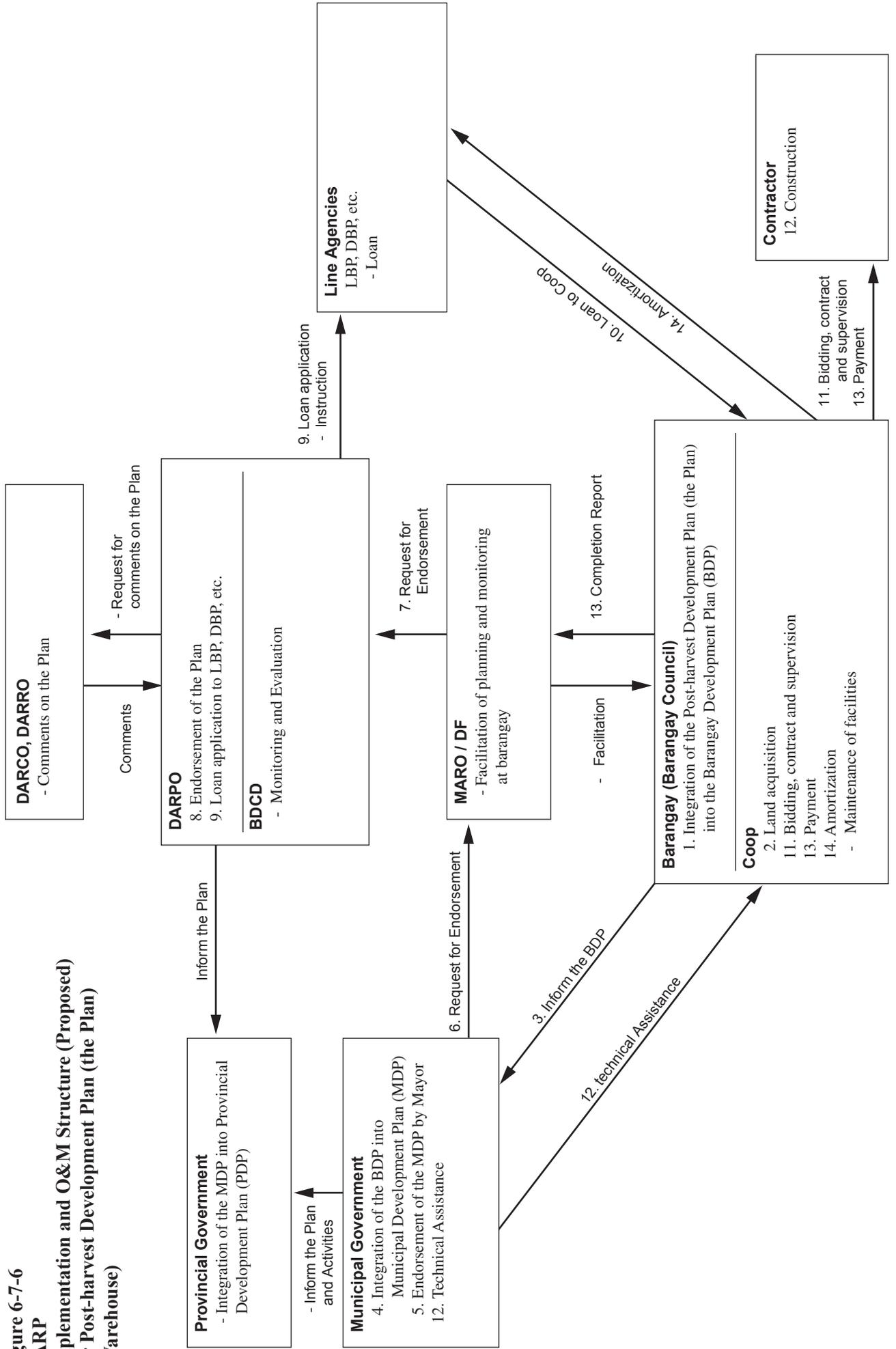
**Figure 6-7-4**  
**CARP**  
**Implementation and O&M Structure (Proposed)**  
**for Irrigation Development Plan (the Plan)**



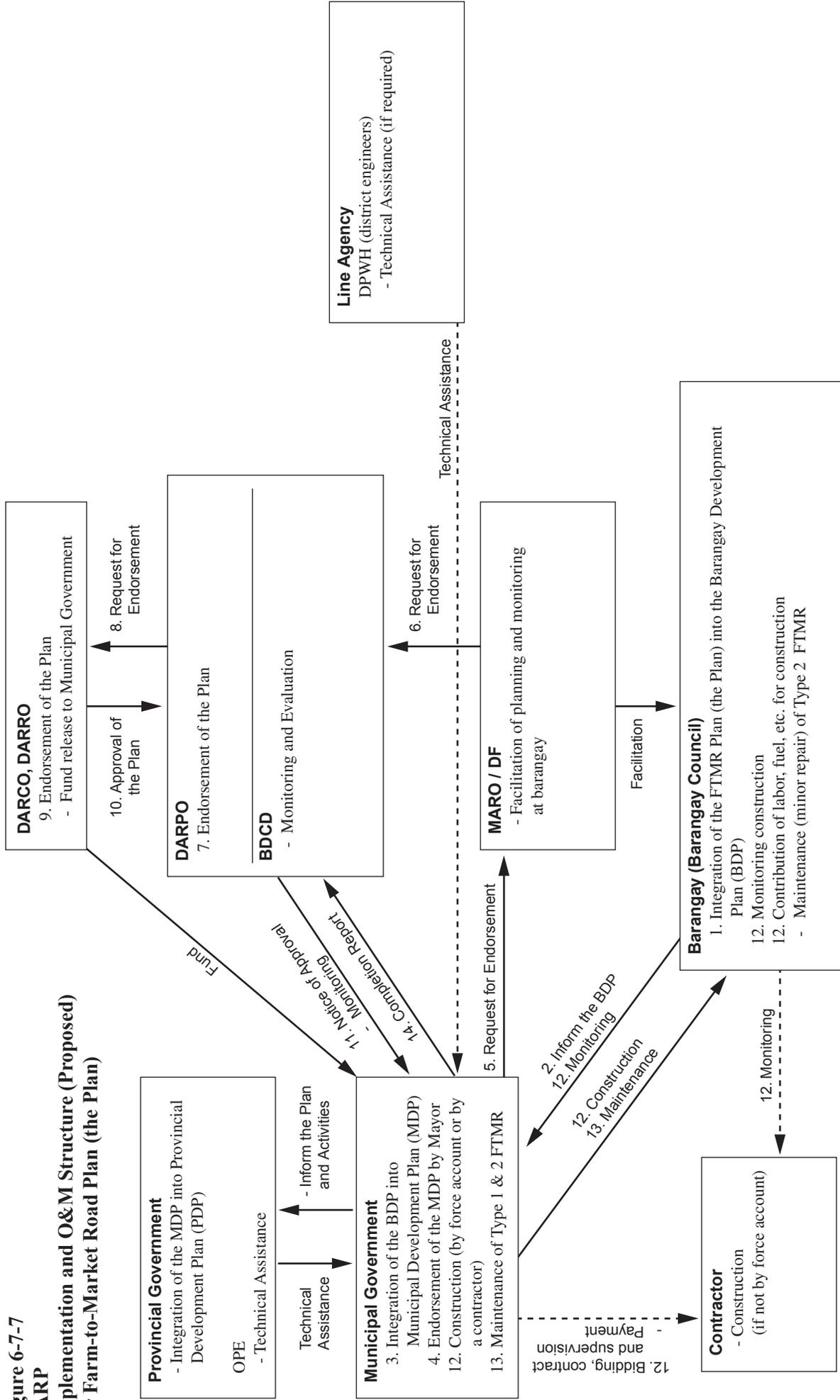
**Figure 6-7-5**  
**CARP**  
**Implementation and O&M Structure (Proposed)**  
**for Post-harvest Development Plan (the Plan)**  
**(Solar Dryer)**



**Figure 6-7-6**  
**CARP**  
**Implementation and O&M Structure (Proposed)**  
**for Post-harvest Development Plan (the Plan)**  
**(Warehouse)**

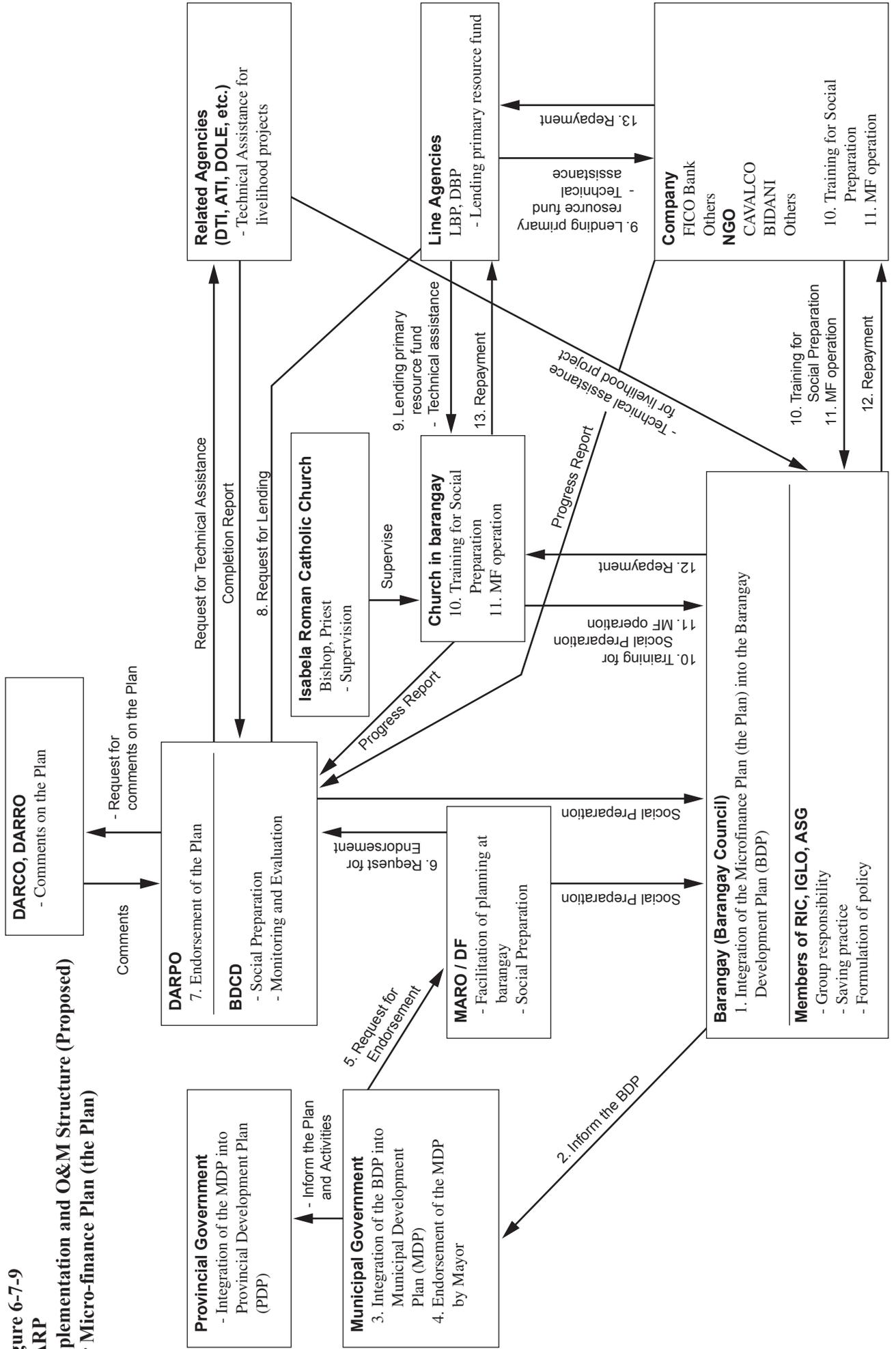


**Figure 6-7-7**  
**CARP**  
**Implementation and O&M Structure (Proposed)**  
**for Farm-to-Market Road Plan (the Plan)**





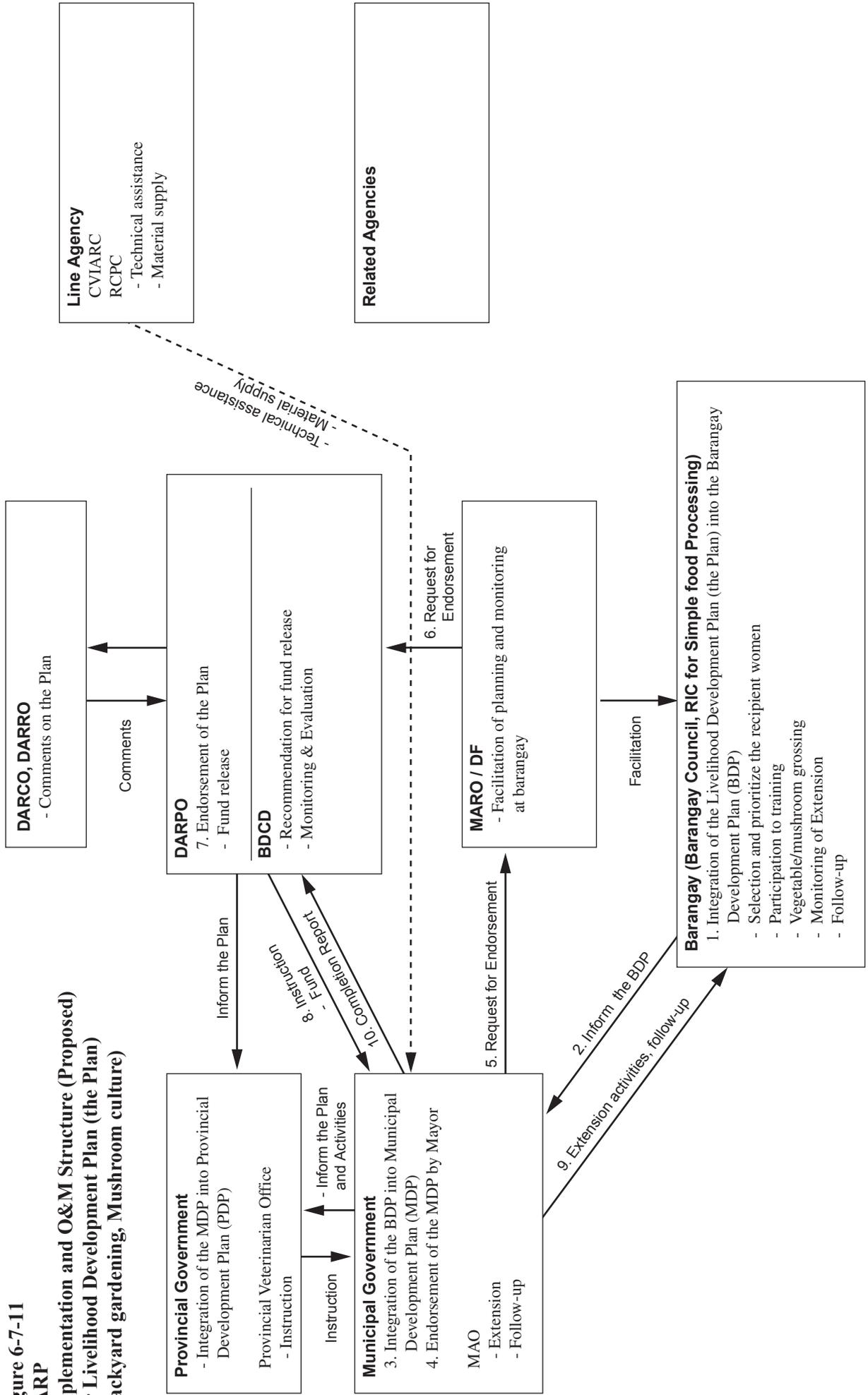
**Figure 6-7-9**  
**CARP**  
**Implementation and O&M Structure (Proposed)**  
**for Micro-finance Plan (the Plan)**



**Figure 6-7-11**

**CARP**

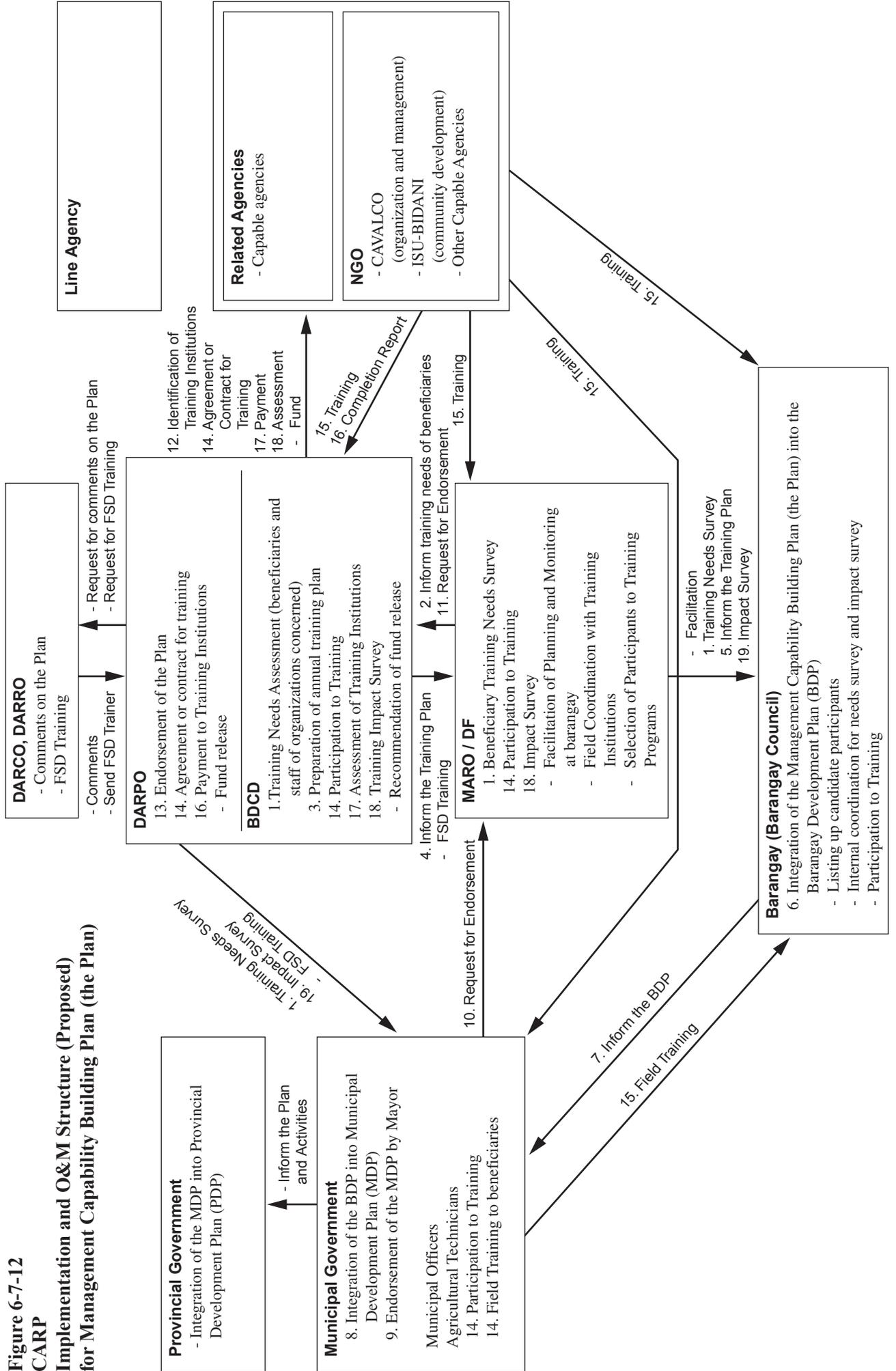
**Implementation and O&M Structure (Proposed) for Livelihood Development Plan (the Plan) (Backyard gardening, Mushroom culture)**





**Figure 6-7-12**  
**CARP**

**Implementation and O&M Structure (Proposed)  
for Management Capability Building Plan (the Plan)**



## 6.8 Implementation Schedule

### 6.8.1 Conditions for Commencement of Implementation

The development plans proposed for each ARC are reciprocally connected with each other. The progress or outputs of plans determines when to commence a project of another plan. The construction of the facilities or provision of extension services included in the plans will be commenced with due consideration of the beneficiaries' capabilities on the use, operation and maintenance of the facilities and services to be provided. That kind of capability building is achieved through social preparation (SP). During the SP, capability building for the agencies' staff will also be carried out so that the supporting system of the government will be strengthened.

To establish the implementation schedule in each ARC, the proposed development plans are classified into the following three (3) groups according to the target beneficiaries, the organizations responsible for the operation and maintenance, etc.

#### i) Group 1

The target beneficiaries of this development plan are individual farmers. The Barangay officials will be the coordinator for the opinions or decisions on the implementation amongst the farmers in the ARC. The Barangay officials will also be responsible for the operation and maintenance of the facilities which designated to the Barangay. The target for the social preparation (SP) training will therefore be the Barangay officials. In order for them to be able to receive and manage the services, one year is considered necessary for the SP<sup>1</sup>. The SP training is a part of Capability Building Plan. Development plans categorized in this group are as

- Agriculture Development Plan (all components except the production of hybrid rice and food processing component)
- Post-harvest Development Plan (solar dryer component only)
- Farm-to-Market Road Development Plan<sup>2</sup>
- Rural Credit Plan (microfinance component<sup>3</sup> only)

#### ii) Group 2

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<sup>1</sup> The term one year was decided through interviews of the organizations in the study area practicing social preparation training. Practicing training during the planting and harvesting time will be burdensome for the farmers, thus this period is not considered.

<sup>2</sup> The municipal government is responsible for the maintenance of the farm-to-market roads. The Barangay, however, is responsible for the minor repair of the production roads.

<sup>3</sup> The microfinance program has the SP training in its component.

The conditions are the same as Group 1. Group 2 does not require intensive social preparation; the project will be implemented from the first year. The following development plan falls into this group.

- Livelihood Development Plan (all components except simple food processing development)

iii) Group 3

Since this plan includes relatively large-scale facility construction or activities, the operation and maintenance must be conducted by capable farmers' organizations. The beneficiaries are members of those organizations. The commencement of the project will be regulated according to the maturity of the organization, and therefore the target for the SP training is the officers of the organizations. The training is a part of the Farmers' Organization Development Plan, which will be described in details in the next section. The following development plans fall in this group:

- Agriculture Development Plan (production of hybrid rice<sup>4</sup> and food processing component only)
- Post-harvest Development Plan (Warehouse component only)
- Irrigation Development Plan<sup>5</sup>
- Rural Credit Plan (GPC component only)
- Livelihood Development Plan (simple food processing component<sup>6</sup> only)

### 6.8.2 Farmers' Organization Strengthening Schedule

The recipient of the project is farmers' organization and it is depend upon the strength of organization whether the operation and maintenance are done with firm responsibility. Therefore, in order to introduce sustainable operation and maintenance, implementation schedule are discussed for aforesaid "Group 3" category..

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<sup>4</sup> The production of hybrid rice (it is a part of Agricultural Development Plan) requires that irrigation facilities be already built and operated. The commencement of Irrigation Development Plan will depend on the maturity of the MPCCI, thus the production of hybrid rice will as well be commenced after the capability of the MPCCI is built.

<sup>5</sup> The operation and maintenance will be conducted by the Irrigator's Association (IA), and the maturity of the IA is determined according to the maturity of the MPCCI.

<sup>6</sup> The RIC will be responsible for the operation and maintenance.

## (1) Basic Concept of Project Implementation

From the viewpoint of maturity of farmers' organization, the basic criteria needed for the implementation of infrastructure development project<sup>7</sup> is summarized in the following four (4) points.

## The result of DCC

- At least the position of the organization is not "Patay"
- The "Strategic Vitality" should be positive (+), or the cooperative that is obviously recognized to have fell down from "Vibrant" to "Anarchy" field.

## The result of movement survey

- The movement is upturn ( )
- Aggressive to loan repayment and at least 70% of existing loan were paid off.

## CBU stock

- At least 200,000 pesos of CBU are accumulated

## Achievement of loan repayment

- At least one time of loan procurement and paid off experience from the financial institutions.

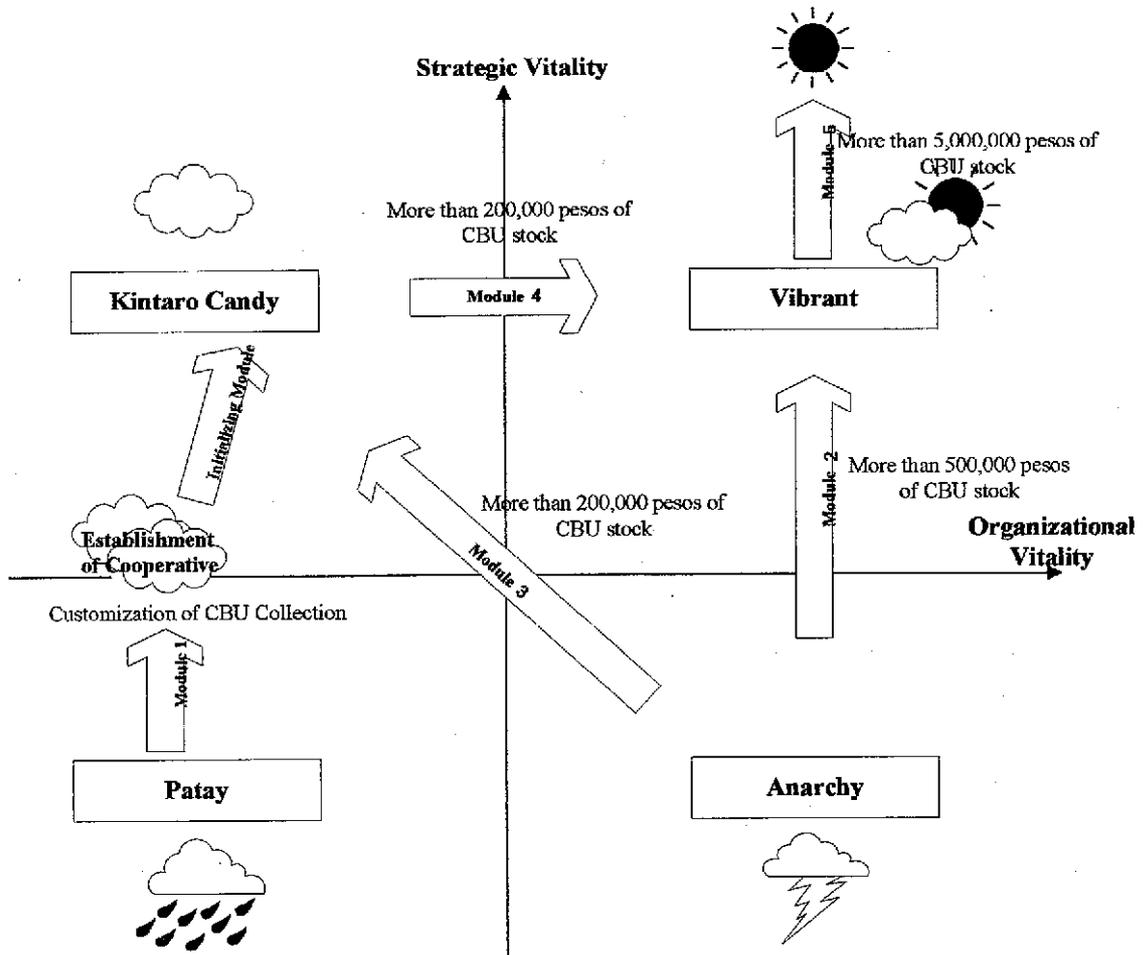
Before the introduction of infrastructure development, five (5) types of strengthening module will be applied to the recipient organization. Applicable module is defined based upon the level<sup>8</sup> of organizational vitality. By the application of module, the farmers' organization deems to have an eligibility to introduce the project. The adaptable projects are depending upon the type of module and duration of module application, as shown in below by cooperative.

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<sup>7</sup>The project includes the broader sense of facility developed by the agriculture development, post-harvest development, irrigation development, farm-to market road development, rural credit plan and livelihood development.

<sup>8</sup>Diagnosis of Corporate Culture (DCC) classifies the existing farmers' organizations into 4 fields, and the organizations in each field are further categorized into two from the result of the movement survey, viz: "Upturn" and "Stagnant or Downturn". The 5 strengthening modules applied to the cooperatives are determined based on the existing distribution of vitality analyzed from both indicators.

**Farmers' Organization Strengthening Module and Requirement of CBU Stock**



i) **Module 1** ("Patay" "Initialization" )

No project implementation is made.

Contents of Module 1: the process from "Patay" to " Initialization" (2 to 15 years)

- SP by DF (1 to 2 years: movement of organization should shift to upturn ( ))
  - ❖ Introduction of superior precedents
  - ❖ Find out of key person for reorganization
  - ❖ PMS by DAR
- Election of new BODs (1year)
- Consolidation of bylaw and policies (1year)
  - ❖ Clarify the reason of "Patay", and discussion how to revive from "Patay" situation
  - ❖ Thorough implementation of organizational policies
  - ❖ Introduction of incentive and penalty system (moral violence, nonpayment)
  - ❖ Introduction of rules on meeting and disclosure
- Increase of CBU (establish custom and rules to collect constantly and timely) (5 to 10 years)
- Rescheduling and repayment of debt by applying said rules and custom)(0 to 15 years)
  - ❖ Formulation of disbursement schedule
  - ❖ Consent formation of line agencies
  - ❖ Start disbursing to 50% disbursement of debt

In the Study Area, it is estimated that the cooperative with "Patay" vitality will reach to the "Initialization" as follows:

Applicable MPCIs and estimated time to reach to "Initialization" field

- Amulungan-Rizal (15 years)  
SP (2 years), Election of BODs & customization of CBU collection (2 years), 50% disbursement of debt (15 years)
- Yeban Norte, Yeban Sur (10 years)  
SP (2 years), Election of BODs & customization of CBU collection (2 years), 50% disbursement of debt (10 years)
- Danmao (2 years)  
SP (2 years), Election of BODs & customization of CBU collection (2 years)
- Minagbag (15 years)  
SP (2 years), Election of BODs & customization of CBU collection (2 years), 50% disbursement of debt (15 years)

ii) **Module 2** ("Anarchy" "Vibrant")

By the application of Module-2, the farmers' organization deems to have an eligibility to introduce the following projects. If Module 2 will be applied, the farmers' organization will reach to "Vibrant" field. The Module 2 will be applied to the cooperatives that have been positioned in "Vibrant" field until recently, and they were one of superior cooperative in the Study Area. For this reason, on the condition that i) the availability of more than 500,000 pesos of CBU, ii) the completion of SP for organizational setup toward the project, and iii) the existence of policies for the project, introduction of projects except Food Processing Plan, and Good Payers Cooperative will be possible even the midst of application of Module-2.

## A. Post-harvest Development Plan

- ✓ Construction of Warehouse (including drying facilities)

## B. Irrigation Development Plan

## C. Rural Credit Plan

- ✓ Farm Ownership Model (FOM) Project

Contents of Module 2: the process from "Anarchy" to "Vibrant" (1 to 8 years)

- SP by DF (1 year: movement of organization should shift to upturn ( ))
  - ❖ Organizational setup for planned project
- Reform of the existing projects (1 years)
  - ❖ Technical assistance by business consultant
  - ❖ Technical training for the project
- Establishment of policies on planned project (1 year)
  - ❖ Rules on operation and maintenance
- Increase of CBU (until over 500,000 pesos)
- Rescheduling and repayment of debt by applying said rules and custom)(0 to 5 years)
  - ❖ Formulation of disbursement schedule
  - ❖ Consent formation of line agencies
  - ❖ Start disbursing to 70% disbursement of debt

In the Study Area, it is estimated that the cooperative with "Anarchy" vitality will reach to the "Vibrant" as follows:

Applicable MPCIs and estimated time to reach to "Vibrant" field

- Epiphany (2 years)  
Policy formulation (1 year), 70% disbursement of debt (2 years)  
Term required to implement the projects except Food processing and Good Payers Cooperative (2 years)
- Cenea (8 years)  
SP (2 years), Reform of existing projects (2 years), Policy formulation (1 year), CBU exceeds 500,000 pesos (8 years), 70% disbursement of debt (5 years)  
Term required to implement the projects except Food processing and Good Payers Cooperative (4 years)

iii) **Module-3** ("Anarchy" "Kintaro Candy")

After the completion of Module 3, the organization deems to have a vitality coping with the following projects.

A. Irrigation Development Plan

Contents of Module 3: the process from "Anarchy" to "Kintaro Candy" (5 to 7 years)

- SP by DF (1 to 10 years: movement of organization should shift to upturn ( ))
  - ❖ Redirection of cooperative (including scrap and build operation), and provision of incidental precedents, find out of key person for reorganization, and application of PMS.
- Consolidation of bylaw and policies (1 to 2 years)
  - ❖ Clarify the reason of "Anarchy", and discussion how to revive from "Kintaro Candy" situation
  - ❖ Thorough implementation of organizational policies
  - ❖ Introduction of incentive and penalty system (moral violence, nonpayment)
- Establishment of policies on planned project (1 year)
  - ❖ Rules on operation and maintenance
  - ❖ Application of related training
- Increase of CBU (until over 200,000 pesos) (5 to 7 years)
- Rescheduling and repayment of debt by applying said rules and custom)(3 to 5 years)
  - ❖ Formulation of disbursement schedule
  - ❖ Consent formation of line agencies
  - ❖ Start disbursing to 70% disbursement of debt



In the Study Area, it is estimated that the cooperative with "Anarchy" vitality will reach to the "Kintaro Candy" as follows:

<p>Applicable MPCIs and estimated time to reach to "Kintaro" field</p> <ul style="list-style-type: none"> <li>• Viola Estate (5 years) SP (1 year), Reformation of bylaw (1 year), Policy formulation (1 year), CBU exceeds 200,000 pesos (5 years), 70% disbursement of debt (5 years)</li> <li>• San Miguel Ramon (7 years) SP (2 years), Reformation of bylaw (1 year), Policy formulation (1 year), CBU exceeds 200,000 pesos (7 years), 70% disbursement of debt (5 years)</li> <li>• Luzon (7 years) SP (2 years), Reformation of bylaw (1 year), Policy formulation (1 year), CBU exceeds 200,000 pesos (7 years), 70% disbursement of debt (5 years)</li> <li>• Dalena (5 years) SP (5 years), Reformation of bylaw (2 years), Policy formulation (1 year), CBU exceeds 200,000 pesos (5 years)</li> </ul>
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iv) **Module 4** ("Kintaro Candy" "Vibrant")

By the application of Module 4, the farmers' organization deems to have an eligibility to introduce the following projects. If Module 4 will be applied, the farmers' organization will reach to "Vibrant" field with an accumulative 500,000 pesos of CBU. On the condition that i) the availability of more than 200,000 pesos of CBU, ii) the completion of SP for organizational setup toward the project, and iii) the existence of policies for the project, introduction of projects except Food Processing Plan, and Good Payers Cooperative will be possible even the midst of application of Module 4.

A. Post-harvest Development Plan

- ✓ Construction of Warehouse (including drying facilities)

B. Irrigation Development Plan

C. Rural Credit Plan

- ✓ Farm Ownership Model (FOM) Project

<p>Contents of Module 4: the process from "Kintaro Candy" to "Vibrant" (3 to 15 years)</p> <ul style="list-style-type: none"> <li>• SP by DF (1 to 5 years: movement of organization should shift to upturn ( )) <ul style="list-style-type: none"> <li>❖ Implementation of entry project</li> </ul> </li> <li>• Consolidation of bylaw and policies (1 to 2 years)</li> </ul>
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- ❖ Introduction of policies that meet with "fair", "care", and "share" of members
- ❖ Thorough implementation of organizational policies
- ❖ Introduction of incentive and penalty system (moral violence, nonpayment)
- Establishment of policies on planned project (1 year)
  - ❖ Rules on operation and maintenance
  - ❖ Application of related training
- Increase of CBU (until over 500,000 pesos) (1 to 10 years)
- Rescheduling and repayment of debt by applying said rules and custom (3 to 5 years)
  - ❖ Formulation of disbursement schedule
  - ❖ Consent formation of line agencies
  - ❖ Start disbursing to 70% disbursement of debt

In the Study Area, it is estimated that the cooperative with "Kintaro Candy" vitality will reach to the "Vibrant" as follows:

- Applicable MPCIs and estimated time to reach to "Vibrant" field
- Lapogan (8 years)  
 SP (1 year), Reformation of bylaw (1 year), Policy formulation (1 year), CBU exceeds 500,000 pesos (8 years), 70% disbursement of debt (3 years)  
 Term required to implement the projects except Food processing and Good Payers Cooperative (4 years)
  - Quiling (7 years)  
 SP (2 years), Reformation of bylaw (1 year), Policy formulation (1 year), CBU exceeds 500,000 pesos (7 years)  
 Term required to implement the projects except Food processing and Good Payers Cooperative (6 years)
  - Dipacamo-Palawan (7 years)  
 SP (2 years), Reformation of bylaw (1 year), Policy formulation (1 year), CBU exceeds 500,000 pesos (7 years)  
 Term required to implement the projects except Food processing and Good Payers Cooperative (4 years)
  - Andarayan (3 years)  
 SP (- year), Reformation of bylaw (1 year), Policy formulation (1 year), 70% disbursement of debt (3 years)  
 Term required to implement the projects except Food processing and Good Payers Cooperative (1 year)

- Cabaruan (12 years)  
 SP (1 year), Reformation of bylaw (1 year), Policy formulation (1 year), CBU exceeds 500,000 pesos (12 years), 70% disbursement of debt (5 years)  
 Term required to implement the projects except Food processing and Good Payers Cooperative (7 years)
- Capirpiriwan (10 years)  
 SP (5 years), Reformation of bylaw (2 years), Policy formulation (1 year), CBU exceeds 500,000 pesos (10 years), 70% disbursement of debt (6 years)  
 Term required to implement the projects except Food processing and Good Payers Cooperative (1 year)
- Fermerdy (15 years)  
 SP (5 years), Reformation of bylaw (2 years), Policy formulation (1 year), CBU exceeds 500,000 pesos (15 years), 70% disbursement of debt (15 years)  
 Term required to implement the projects except Food processing and Good Payers Cooperative (10 years)

v) **Module-5** ("Vibrant" "Area wide Cooperative")

By the application of Module 5, the farmers' organization deems to have an eligibility to introduce every kind of projects as "Area wide cooperative". To be an "Area wide cooperative", making profit from the existing business as well as an accumulative 5,000,000 pesos of CBU are necessary. The reason for this is that approximately the same amount of capital is necessary to construct a standard warehouse in the Study Area. But on the condition that i) the availability of more than 200,000 pesos of CBU, ii) the completion of SP for organizational setup toward the project, and iii) the existence of policies for the project, introduction of projects except Food Processing Plan will be possible even the midst of application of Module 5.

Contents of Module 5: the process from "Vibrant" to "Area wide Cooperative" (5 ~ 15 years)

- SP by DF (1 year: movement of organization should shift to upturn ( ))
  - ❖ Organizational setup for planned project
- Consolidation of bylaw and policies (1 year)
  - ❖ Introduction of policies that meet with "fair", "care", and "share" of members
  - ❖ Thorough implementation of organizational policies
  - ❖ Introduction of incentive and penalty system (moral violence, nonpayment)

- Making of constant profit from the existing projects (5 to 15 years)
  - ❖ Technical assistance by business consultant
  - ❖ Technical training for the project
- Establishment of policies on planned project (1 year)
  - ❖ Rules on operation and maintenance
  - ❖ Application of related training
- Increase of CBU (until over 5,000,000 pesos) (12 to 20 years)
- Rescheduling and repayment of debt by applying said rules and custom)(5 to 15 years)
  - ❖ Formulation of disbursement schedule
  - ❖ Consent formation of line agencies
  - ❖ Start disbursing to 70% disbursement of debt

In the Study Area, it is estimated that the cooperative with "Vibrant" vitality will reach to the "Area wide cooperative" as follows:

- Applicable MPCIs and estimated time to reach to "Area wide cooperative" field
- San Manuel (20 years)
 

SP (1 year), Reformation of bylaw (1 year), Constant profit from existing project (8 years), Policy formulation (1 year), CBU exceeds 5,000,000 pesos (20 years), 70% disbursement of debt (8 years)

Term required to implement the projects except Food processing (1 year)
  - La Suerte Cluster (20 years)
 

SP (1 year), Reformation of bylaw (1 year), Constant profit from existing project (5 years), Policy formulation (1 year), CBU exceeds 5,000,000 pesos (20 years)

Term required to implement the projects except Food processing (4 years)
  - Bantug Petines (17 years)
 

SP (1 year), Reformation of bylaw (1 year), Constant profit from existing project (5 years), Policy formulation (1 year), CBU exceeds 5,000,000 pesos (17 years), 70% disbursement of debt (5 years)

Term required to implement the projects except Food processing (1 year)
  - San Miguel Burgos (20 years)
 

SP (1 year), Reformation of bylaw (1 year), Constant profit from existing project (8 years), Policy formulation (1 year), CBU exceeds 5,000,000 pesos (20 years)

Term required to implement the projects except Food processing (8 years)
  - Canan (16 years)
 

SP (1 year), Reformation of bylaw (1 year), Constant profit from existing project (3

<p>years), Policy formulation (1 year), CBU exceeds 5,000,000 pesos (16 years), 70% disbursement of debt (8 years)</p> <p>Term required to implement the projects except Food processing (1 year)</p> <ul style="list-style-type: none"> <li>• San Ramon (20 years)</li> </ul> <p>SP (1 year), Reformation of bylaw (1 year), Constant profit from existing project (3 years), Policy formulation (1 year), CBU exceeds 5,000,000 pesos (20 years))</p> <p>Term required to implement the projects except Food processing (3 years)</p> <ul style="list-style-type: none"> <li>• Epiphany (Starting Module 5 from 3rd year, just after the completion of Module 2: 12 years)</li> </ul> <p>Reformation of bylaw (1 year), CBU exceeds 5,000,000 pesos (12 years)</p> <ul style="list-style-type: none"> <li>• Cenea (Starting Module 5 from 8th year, just after the completion of Module 2: 19 years)</li> </ul> <p>Reformation of bylaw (1 year), CBU exceeds 5,000,000 pesos (19 years),</p>
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vi) **Initializing Module**

Initializing module represents the organization-strengthening program that is provided by DF to the Barangays without cooperative. To estimate the implementation schedule, three (3) years will be tentatively adopted to for the application of this module. It is assumed that the vitality of cooperative at initial stage is "Kintaro candy" field. Accordingly, the projects not affected by the maturity of the cooperative will be possible to introduce from initial stage.

(2) Summary of Implementation Schedule by ARC

The figure in the following page illustrates the summary of implementation schedule for overall 21 ARCs. For preference, the interviews and information from DARPO were prioritized to judge the vitality of farmers' organizations for which DCC has not made yet.

(3) Women's Organization Strengthening Module

For most of women's organizations, the preparatory period for planned project (Simple Food Processing of Livelihood Development Plan) does not have significant difference, as the reasons shown below;

- ♦ Most of women's organization do not have debt from the government institutions

- ♦ There are few capital stocks, because the stock of capital is not their main purpose.
- ♦ There are bylaw and policies inside the organization but they have never been working so far.

The contents of women' organization strengthening module are as follows, and summary of implementation schedule by ARC is shown in the succeeding pages.

Contents of Women' Organization Strengthening Module

SP by DF (1 year: movement of organization should shift to upturn ( ))

- Organizational setup for Simple Food Processing project

Consolidation of by-law

Introduction of suitable rules

Thorough implementation of organizational policies

Introduction of incentive and penalty system (moral violence, nonpayment)

Customization of saving practice

Planning of the Project and pre training (1 to 5 years from to )

Establishment of policies on planned project (0 to 1 year)

- Rules on operation and maintenance
- Training for O&M

Table 6-8-1 Implementation Schedule of MPCl Strenghthening Module

ARC	Name of MPCl	Results of DCC (underline estimated)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Lapogan ARC	Kintaro Candy (↑)	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4
2	Quiling ARC	Kintaro Candy (↑)	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4
4	San Manuel ARC	Vibrant (↑)	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3
5	San Miguel Ramon ARC	Anarchy (↓)	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3
7-1	La Suerte Cluster	Vibrant (↑)	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5
7-1	San Marcello Farmers MPCl	Patay (→)	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
7-2	Dipaciano-Palawan Settlers MPCl	Kintaro Candy (↑)	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4
7-3	DIPASVI Cluster	Patay (→)	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
7-3	CENEA Cluster	Anarchy (→)	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2
7-3	CENEA Cluster	Anarchy (↑)	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2	Module 2
8	Miragbag ARC	Patay (↓)	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
9	Cabatuan ARC	Kintaro Candy (↓)	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4
10	Capitriwan ARC	Kintaro Candy (↓)	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4
11	Fernady ARC	Kintaro Candy (↓)	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4
12	Luzon ARC	Anarchy (↓)	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3
13	Progress	Kintaro Candy (→) Barangay	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module	Initial Module
14	Yaban ARC	Patay (↓)	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
15	Cann ARC	Farmer's Credit and Dev. Coop	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5
16	Andarayan ARC	Kintaro Candy (↑)	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4	Module 4
17	Bantug Petines ARC	Patay (↓)	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
17	Bantug Petines MPCl	Vibrant (↑)	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5
18	Dalena/Simenu ARC	Farmer's Credit Cooperative	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3
19	Daimao ARC	Simenu Sur MPCl	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
20	San Miguel Burgos ARC	Namrao MPCl	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
21	San Ramon ARC	San Miguel MPCl	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5	Module 5
21	San Ramon ARC	San Ramon ABM MPCl	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3	Module 3
22	Viola Estate ARC	Agrian Reform Beneficiaries Association	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
22	Viola Estate ARC	Banquero MPCl	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1
22	Viola Estate ARC	Sallucong MPCl	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1	Module 1

Table 6-8-2 Implementation Schedule of Female Organization Strengthening Module

ARC	Name of Supportive Organizations	Result of IOC (Underline/Estimate)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Lapogon ARC	Kintaro Candy (1)																				
2	Quiling ARC	Patsy (1)																				
4	San Manuel ARC	Anarchy (-)																				
	San Manuel IGLO	Anarchy (-)																				
	Nassa Auto Savings Green Ladies Organization	Kintaro Candy (1)																				
5	San Miguel Ramon ARC	Kintaro Candy (1)																				
	Samahang Kababaihan Ng San Ramon (SAK-ARA)	Kintaro Candy (1)																				
6	Rizal-Armulungin ARC	Patsy (1)																				
7-1	La Suerte Cluster	Vibrant (1)																				
7-2	DIPASVI Cluster	Kintaro Candy (1)																				
7-3	CENEA Cluster	Anarchy (-)																				
8	Mingbag ARC	Anarchy (-)																				
	Mingbag RIC	Anarchy (-)																				
9	Cabanuan ARC	Kintaro Candy (-)																				
	Cabanuan IGLO	Kintaro Candy (-)																				
	Cabanuan ASG	Kintaro Candy (-)																				
10	Capirihuan ARC	Vibrant (-)																				
11	Fernely ARC	Kintaro Candy (-)																				
	Fernely ASG	Kintaro Candy (-)																				
	Luzon RIC	Kintaro Candy (1)																				
	Luzon Women's Club	Kintaro Candy (1)																				
	Luzon IGLO	Kintaro Candy (1)																				
	Davao RIC	Kintaro Candy (1)																				
13	Progreso	Anarchy (1)																				
	Progreso RIC	Anarchy (1)																				
	Yeban Norte IGLO	Kintaro Candy (-)																				
14	Yeban ARC	Kintaro Candy (-)																				
	Senior Citizens Organization	Kintaro Candy (-)																				
	Kaataang Barangay	Kintaro Candy (-)																				
15	Canan ARC	Vibrant (1)																				
	Canan RIC	Vibrant (1)																				
16	Andarayan ARC	Kintaro Candy (1)																				
	Andarayan RIC	Kintaro Candy (1)																				
17	Bantug Peñes ARC	Anarchy (-)																				
	Bantug Peñes RIC	Anarchy (-)																				
	Simanu Sur Engeritain Children's Club	Vibrant (-)																				
18	Dabana/Simanu ARC	Vibrant (1)																				
	Simanu Norte RIC	Vibrant (1)																				
19	Darimao ARC	Anarchy (1)																				
	Darimao RIC	Anarchy (1)																				
20	San Miguel Burgos ARC	Anarchy (-)																				
	San Miguel RIC	Anarchy (-)																				
	San Miguel IGRO	Anarchy (-)																				
21	San Ramon ARC	Anarchy (1)																				
	San Ramon RIC	Anarchy (1)																				
	Community Project Assistance Team (CPMT)	Anarchy (1)																				
	Community Project Management Team (CPMT)	Anarchy (1)																				
22	Viola Estate ARC	IGRO (x 4 Brigys)																				
	IGRO (x 4 Brigys)	Anarchy (1)																				
	RIC (x 4 Brigys)	Anarchy (1)																				



図 6-8-1 Lapogan ARC (1) 開発計画実施スケジュール

Development Items	Short Term				Medium Term				Long Term												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 <u>Management Capability Building Plan</u>	█																				
2 <u>Farmers' Organization Strengthening Development (Module 4)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso CBU : over 500,000 Peso Repayment of Loan : over 70 %	█	█	█	█	█	█	█	█													
3 <u>Irrigation Development Plan</u> Lapogan CPIP				█																	
4 <u>Agricultural Development Plan</u> Hybrid rice and Mung bean introduction IRM & INM follow-up Crop diversification program (fruit trees)			█	█	█	█	█	█													
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
6 <u>Farm-to-market Road Development Plan</u> Type II				█																	
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance	█	█	█	█																	
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

図 6-8-2 Quiiling ARC (2) 開発計画実施スケジュール

Development Items	Short Term			Medium Term						Long Term										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>																				
2 <u>Farmers' Organization Strengthening Development (Module 4)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso CBU : over 500,000 Peso																				
4 <u>Agricultural Development Plan</u> RTV control Hybrid rice and Mung bean introduction Crop diversification program (vegetables)																				
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay MPP by Barangay Warehouse w/dryers by MPCl																				
6 <u>Farm-to-market Road Development Plan</u> Type II																				
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																				
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising																				

図 6-8-3 San Manuel ARC (4) 開発計画実施スケジュール

Development Items	Short Term				Medium Term						Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 5)</u>	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Social Preparation	█																			
Regulation Arrangement	█																			
Preparation of Guideline	█																			
CBU : over 200,000 Peso	█																			
CBU : over 1,000,000 Peso	█																			
Repayment of Loan : over 70 %	█																			
4 <u>Agricultural Development Plan</u>																				
IRM & INM training																				
Community plant nursery & propagation																				
Crop diversification program (fruit trees)																				
5 <u>Post-harvest Development Plan</u>																				
Solar Dryer by Barangay																				
MPP by Barangay																				
Warehouse w/dryers by MPCl																				
6 <u>Farm-to-market Road Development Plan</u>																				
Type II																				
River Crossing																				
7 <u>Rural Credit Plan</u>																				
Social Preparation																				
Micro Finance																				
8 <u>Livelihood Development Plan</u>																				
Livestock & poultry development																				
Backyard gardening																				
Fish raising																				
Mushroom culture																				

図 6-8-4 San Miguel (Ramon) ARC (5) 開発計画実施スケジュール

Development Items	Short Term					Medium Term					Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 3)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso Repayment of Loan : over 70 %	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
3 <u>Irrigation Development Plan</u> Construction of New Sub-Lateral Canal on MRIS					█															
4 <u>Agricultural Development Plan</u> RTV control Hybrid rice and Mung bean introduction Crop diversification program (vegetables)		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
6 <u>Farm-to-market Road Development Plan</u> Type II River Crossing	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

図 6-8-5 Amulugan Rizal ARC (6) 開発計画実施スケジュール

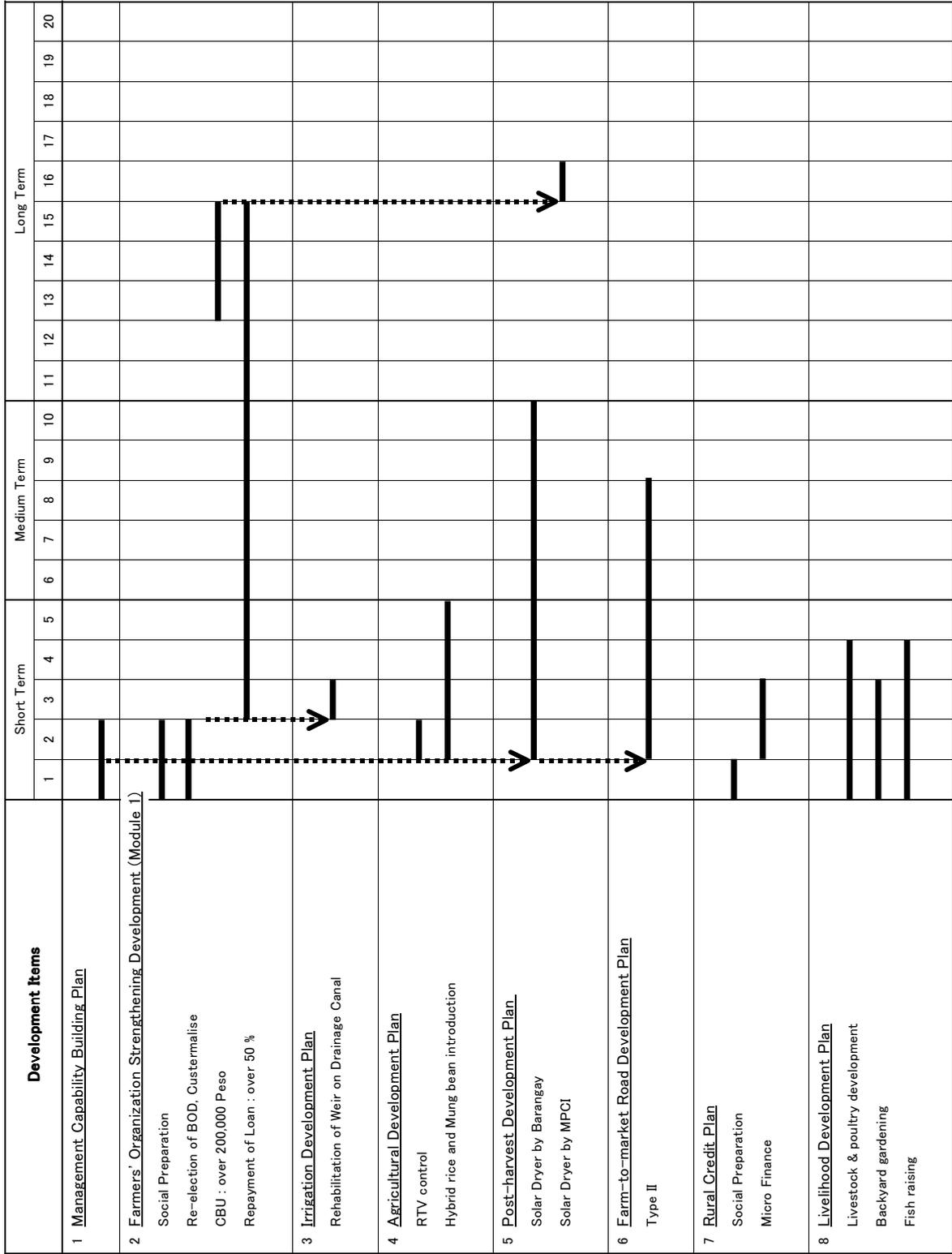


図 6-8-6 La Suerte Cluster (7-1) 開発計画実施スケジュール

Development Items	Short Term				Medium Term				Long Term												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1 Management Capability Building Plan</b>																					
<b>2 Farmers' Organization Strengthening Development (Module 5)</b> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso CBU : over 1,000,000 Peso																					
<b>4 Agricultural Development Plan</b> IPM & INM training Slope agriculture technology Community plant nursery & propagation Crop diversification program (perennials) Livestock development (cattle 200)																					
<b>5 Post-harvest Development Plan</b> Solar Dryer by Barangay Warehouse w/dryers by MPCl																					
<b>6 Farm-to-market Road Development Plan</b> Type I Type II River crossing																					
<b>7 Rural Credit Plan</b> Social Preparation Micro Finance																					
<b>8 Livelihood Development Plan</b> Backyard gardening Fish raising Mushroom culture Simple food processing																					

図 6-8-7 Dipasivi Cluster (7-2) 開発計画実施スケジュール

Development Items	Short Term				Medium Term				Long Term											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>																				
2 <u>Farmers' Organization Strengthening Development (Module 4)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso CBU : over 500,000 Peso																				
4 <u>Agricultural Development Plan</u> IPM & INM training Slope agriculture technology Community plant nursery & propagation Crop diversification program (perennials) Livestock development (cattle 200)																				
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl																				
6 <u>Farm-to-market Road Development Plan</u> Type II River crossing																				
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																				
8 <u>Livelihood Development Plan</u> Backyard gardening Fish raising Mushroom culture Simple food processing																				

図 6-8-8 Cenea Cluster (7-3) 開発計画実施スケジュール

Development Items	Short Term				Medium Term				Long Term												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 <u>Management Capability Building Plan</u>																					
2 <u>Farmers' Organization Strengthening Development (Module 2)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 500,000 Peso Repayment of Loan : over 70 %																					
4 <u>Agricultural Development Plan</u> IPM & INM training Slope agriculture technology Community plant nursery & propagation Crop diversification program (perennials) Livestock development (cattle 200)																					
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay MPP by Barangay Warehouse w/dryers by MPCl																					
6 <u>Farm-to-market Road Development Plan</u> Type II River crossing																					
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																					
8 <u>Livelihood Development Plan</u> Backyard gardening Fish raising Mushroom culture Simple food processing																					



図 6-8-9 Minagpag ARC (8) 開発実施スケジュール

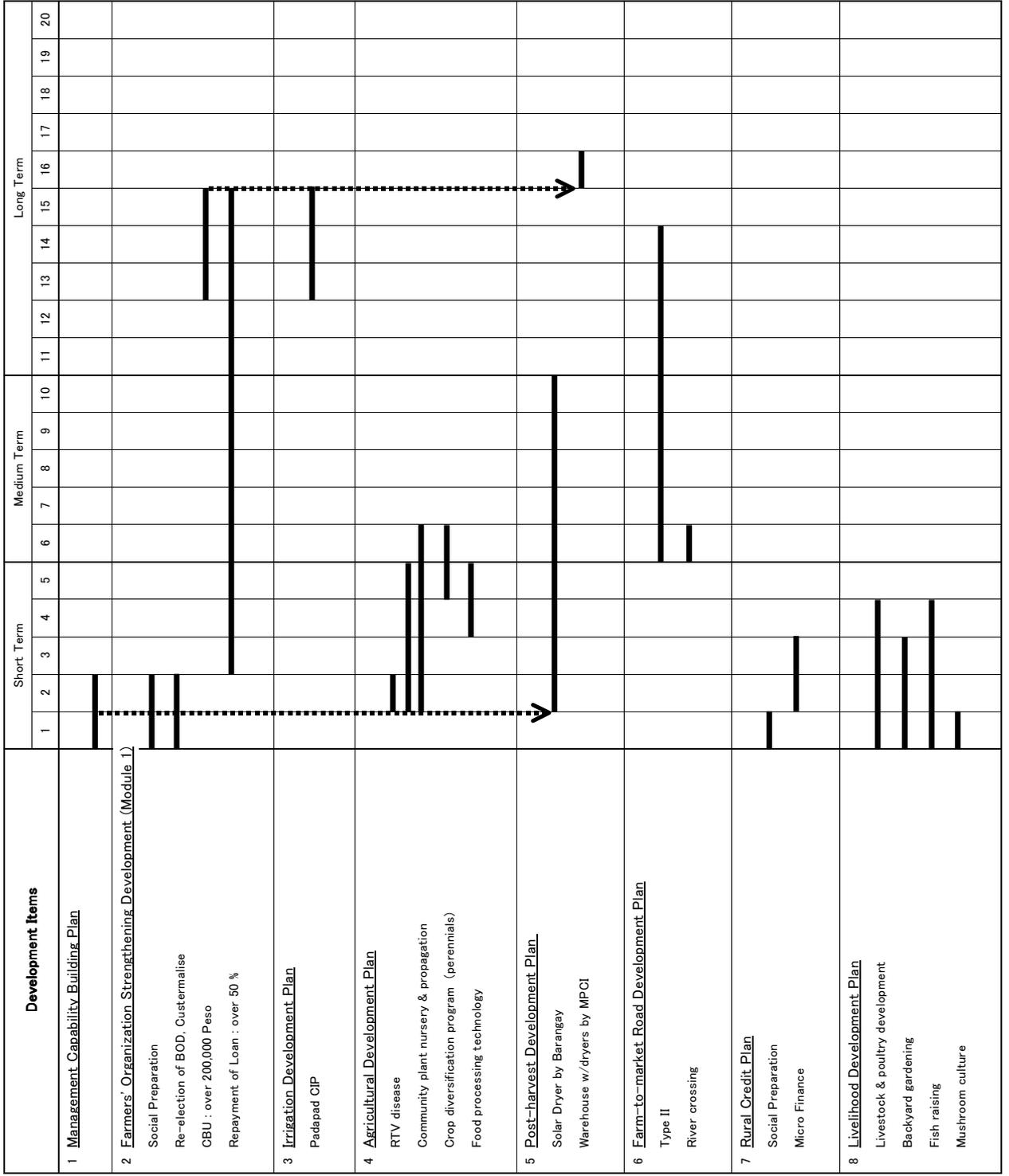


図 6-8-10 Cabaruan ARC (9) 開発計画実施スケジュール

Development Items	Short Term				Medium Term						Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 4)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso CBU : over 500,000 Peso Repayment of Loan : over 70 %	█	█																		
3 <u>Irrigation Development Plan</u> Cabaruan CIP																				
4 <u>Agricultural Development Plan</u> Slop agriculture technology Crop diversification program (perennials)																				
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl																				
6 <u>Farm-to-market Road Development Plan</u> Type II River Crossing																				
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																				
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising Mushroom culture																				

図 6-8-11 Capripirwan ARC (10) 開発計画実施スケジュール

Development Items	Short Term			Medium Term						Long Term										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 4)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso CBU : over 500,000 Peso Repayment of Loan : over 70 %				█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
3 <u>Irrigation Development Plan</u> Capripirwan CIP																				
4 <u>Agricultural Development Plan</u> Slop agriculture technology Community plant nursery & propagation Crop diversification program (perennials)					█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCFI																				
6 <u>Farm-to-market Road Development Plan</u> Type II River Crossing																				
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																				
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising Mushroom culture																				

図 6-8-12 Ferneldy ARC (11) 開発計画実施スケジュール

Development Items	Short Term			Medium Term						Long Term										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 4)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso CBU : over 500,000 Peso Repayment of Loan : over 70 %	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
4 <u>Agricultural Development Plan</u> IPM & INM training on corn Crop diversification program (vegetables & fruit)		█	█	█																
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
6 <u>Farm-to-market Road Development Plan</u> Type II River Crossing	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

図 6-8-13 Luzon ARC (12) 開発計画実施スケジュール

Development Items	Short Term			Medium Term			Long Term														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 <u>Management Capability Building Plan</u>	█																				
2 <u>Farmers' Organization Strengthening Development (Module 3)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso Repayment of Loan : over 70 %	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
4 <u>Agricultural Development Plan</u> RTV control Hybrid rice and Mung bean introduction Crop diversification program (vegetables)		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay MPP Warehouse w/dryers by MPCI		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
6 <u>Farm-to-market Road Development Plan</u> Type II		█																			
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance	█	█																			
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

図 6-8-14 Progreso ARC (13) 開発計画実施スケジュール

Development Items	Short Term			Medium Term						Long Term											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<b>1 Management Capability Building Plan</b>	█	█																			
<b>2 Farmers' Organization Strengthening Development (Module D)</b>	█	█																			
Social Preparation	█	█																			
Regulation Arrangement	█	█																			
Preparation of Guideline	█	█																			
CBU : over 200,000 Peso																					
CBU : over 500,000 Peso																					
<b>4 Agricultural Development Plan</b>																					
Slope agriculture technology																					
Community plant nursery & propagation																					
Crop diversification program (perennials)																					
Livestock development (cattle 30, swine 60)																					
<b>5 Post-harvest Development Plan</b>																					
Solar Dryer by Barangay																					
Warehouse w/dryers by MPCl																					
<b>6 Farm-to-market Road Development Plan</b>																					
Type II																					
River crossing																					
<b>7 Rural Credit Plan</b>																					
Social Preparation																					
Micro Finance																					
<b>8 Livelihood Development Plan</b>																					
Backyard gardening																					
Fish raising																					
Mushroom culture																					
Simple food processing																					

図 6-8-15 Yeban Norte / Benti Soliven ARC (14) 開発計画実施スケジュール

Development Items	Short Term					Medium Term					Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 1)</u> Social Preparation Re-election of BOD, Custermalise CBU : over 200,000 Peso Repayment of Loan : over 50 %	█	█																		
4 <u>Agricultural Development Plan</u> IPM & INM training Slope agriculture technology Community plant nursery & propagation Crop diversification program (perennials)		█																		
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl																				
6 <u>Farm-to-market Road Development Plan</u> Type II																				
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance		█																		
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising Mushroom culture																				

図 6-8-16 Canan ARC (15) 開発計画実施スケジュール

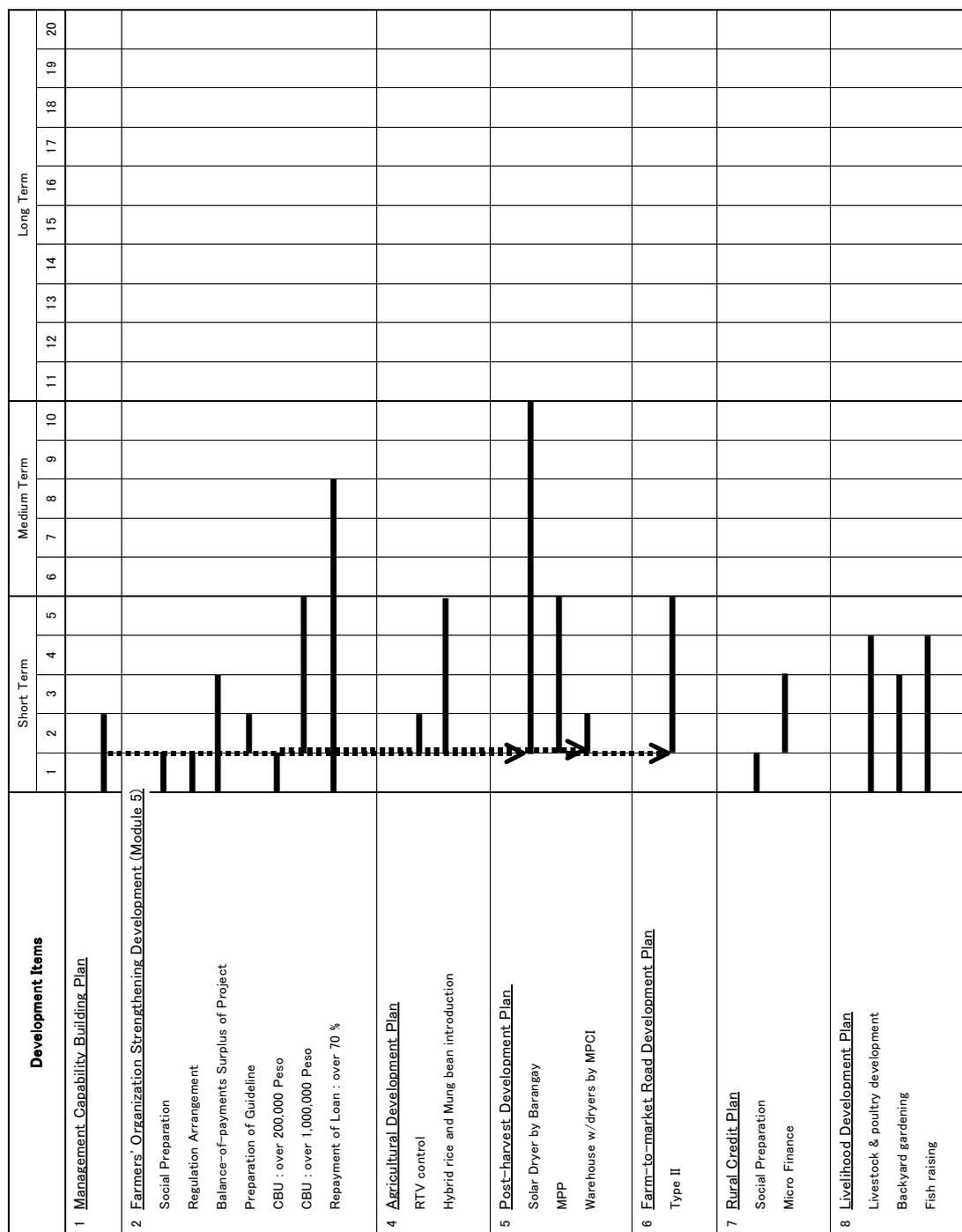




図 6-8-17 Andarayan ARC (16) 開発計画実施スケジュール

Development Items	Short Term				Medium Term				Long Term												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 <u>Management Capability Building Plan</u>																					
2 <u>Farmers' Organization Strengthening Development (Module 1)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 500,000 Peso Repayment of Loan : over 70 %		(already prepared)																			
3 <u>Irrigation Development Plan</u> Andarayan Communal Pump Irrigation Project																					
4 <u>Agricultural Development Plan</u> RTV control & Mung bean introduction Crop diversification program (vegetable) Food processing																					
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay MPP Warehouse w/ dryers by MPCl																					
6 <u>Farm-to-market Road Development Plan</u> Type II																					
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																					
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising																					

図 6-8-18 Bantug Petines ARC (17) 開発計画実施スケジュール

Development Items	Short Term					Medium Term					Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 5)</u>	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Social Preparation	█																			
Regulation Arrangement	█																			
Balance-of-payment Surplus of Project	█																			
Preparation of Guideline	█																			
CBU : over 200,000 Peso	█																			
CBU : over 1,000,000 Peso	█																			
Repayment of Loan : over 70 %	█																			
4 <u>Agricultural Development Plan</u>																				
RTV control																				
Hybrid rice and Mung bean introduction																				
5 <u>Post-harvest Development Plan</u>																				
Solar Dryer by Barangay																				
MPP																				
Warehouse w/ dryers by MPCI																				
6 <u>Farm-to-market Road Development Plan</u>																				
Type II																				
7 <u>Rural Credit Plan</u>																				
Social Preparation																				
Micro Finance																				
8 <u>Livelihood Development Plan</u>																				
Livestock & poultry development																				
Backyard gardening																				
Fish raising																				

図 6-8-19 Dalena & Simanu ARC (18) 開発計画実施スケジュール

Development Items	Short Term					Medium Term					Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 3)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso Repayment of Loan : over 70 % (already repayed over 70 % of Loan)	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
3 <u>Irrigation Development Plan</u> Rehabilitation of Simunu CIP										█										
4 <u>Agricultural Development Plan</u> Crop diversification program (vegetables and Perennials) IPM & INM training				█	█															
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MFPI																				
6 <u>Farm-to-market Road Development Plan</u> Type II River crossing																				
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance	█																			
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising Mushroom culture				█	█															

図 6-8-20 Damiao ARC (19) 開発計画実施スケジュール

Development Items	Short Term				Medium Term				Long Term												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 <u>Management Capability Building Plan</u>																					
2 <u>Farmers' Organization Strengthening Development (Module 1)</u> Social Preparation Re-election of BOD, Custermalise CBU : over 200,000 Peso Repayment of Loan : over 50 % (already repayed over 70% of Loan)																					
3 <u>Irrigation Development Plan</u> Damiao CPIP																					
4 <u>Agricultural Development Plan</u> RTV control Hybrid rice and Mung bean introduction																					
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl																					
6 <u>Farm-to-market Road Development Plan</u> Type II																					
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																					
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising																					

図 6-8-21 San Miguel - Burgos ARC (20) 開発計画実施スケジュール

Development Items	Short Term			Medium Term						Long Term											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<u>1 Management Capability Building Plan</u>	█																				
<u>2 Farmers Organization Strengthening Development (Module 5)</u>	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Social Preparation																					
Regulation Arrangement																					
Balance-of-payments Surplus of Project																					
Preparation of Guideline																					
CBU : over 200,000 Peso																					
CBU : over 1,000,000 Peso																					
Repayment of Loan : over 70 %																					
(already repayed over 70 % of Loan)																					
<u>4 Agricultural Development Plan</u>																					
RTV control																					
Hybrid rice & Mung bean introduction																					
Crop diversification program (vegetables & fruit)																					
IPM & INM training																					
<u>5 Post-Harvest Development Plan</u>																					
Solar Dryer by Barangay																					
Warehouse w/dryers by MPCl																					
<u>6 Farm to Market Road Development Plan</u>																					
Type II																					
<u>7 Rural Credit Plan</u>																					
Social Preparation																					
Micro Finance																					
<u>8 Livelihood Development Plan</u>																					
Livestock & poultry development																					
Backyard gardening																					
Fish raising																					

図 6-8-22 San Raman ARC (21) 開発計画実施スケジュール

Development Items	Short Term					Medium Term					Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>																				
2 <u>Farmers' Organization Strengthening Development (Module 5)</u> Social Preparation Regulation Arrangement Balance-of-payments Surplus of Project Preparation of Guideline CBU : over 200,000 Peso CBU : over 1,000,000 Peso Repayment of Loan : over 70 %																				
4 <u>Agricultural Development Plan</u> RTV control Hybrid rice & Mung bean introduction Crop diversification program (vegetables & fruit)																				
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/ dryers by MPCI																				
6 <u>Farm-to-market Road Development Plan</u> Type II River crossing																				
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance																				
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising																				

図 6-8-23 Viola Estate Cluster (22) 開発計画実施スケジュール

Development Items	Short Term					Medium Term					Long Term									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 <u>Management Capability Building Plan</u>	█																			
2 <u>Farmers' Organization Strengthening Development (Module 3)</u> Social Preparation Regulation Arrangement Preparation of Guideline CBU : over 200,000 Peso Repayment of Loan : over 70 %	█	█	█	█	█	█	█	█	█	█										
4 <u>Agricultural Development Plan</u> IPM & INM training Mung bean introduction into crop rotation Community plant nursery & propagation Crop diversification program (vegetables and Perennials)		█	█	█	█	█	█	█	█	█										
5 <u>Post-harvest Development Plan</u> Solar Dryer by Barangay Warehouse w/dryers by MPCl					█	█	█	█	█	█										
6 <u>Farm-to-market Road Development Plan</u> Type II River crossing					█	█	█	█	█	█										
7 <u>Rural Credit Plan</u> Social Preparation Micro Finance	█	█	█	█	█															
8 <u>Livelihood Development Plan</u> Livestock & poultry development Backyard gardening Fish raising	█	█	█	█	█	█	█	█	█	█										

## 6.9 Project Cost

### 6.9.1 Cost Estimate

#### (1) Unit cost/price

The unit costs/prices are determined considering the recent projects executed by the line agencies and NGOs in June 2000.

#### (2) Exchange rates

Exchange rate based on the average rate for three months from March to May 2000 are applied for this estimate.

$$1.0 \text{ US\$} = 42.0 \text{ pesos} = 106.0 \text{ yen}$$

#### (3) Physical Contingency and Administration Cost

For cost estimate, the following assumptions are applied:

Administration Cost:	8% of direct construction cost
Physical Contingency:	10% of costs such as direct construction cost, administration cost

#### (4) Price Escalation

For estimate of price contingency, the annual price escalation rate of 2.0 % for the foreign currency portions are based on the average rate for advanced 5 countries. The annual price escalation rate of 9.4 % for the local currency portion used is based on the average rate for 1 year from July 1998 to June 1999.

### 6.9.2 Project Cost

The total project cost amounted to 4,805.9 million pesos. The necessary project costs by short, medium and long term development period are 3,467.6 million, 809.9 million and 528.3 million pesos, respectively. (refer to Table 6-9-1)



### **6.9.3 Operation and Maintenance Costs**

The operation and maintenance costs consist of fuel costs and electricity of facilities, repair cost of the offices and labor cost, O&M and general management costs. For physical contingency, the assumption applied is 10%. The necessary operation and maintenance costs by short, medium and long-term development period are 4.16 million, 19.92 million and 44.08 million pesos, respectively. (refer to Table 6-9-2)

Table 6-9-1 Project Cost

( unit : '000 Peso )

Development	Short Term	Medium Term	Long Term	Total
1. ARC				
1 - Lapogan	66,469	10,003	827	77,299
2 - Quiling	2,558	4,550	0	7,108
4 - San Manuel	10,764	5,381	8,980	25,125
5 - San Miguel (Ramon)	22,456	16,277	0	38,733
6 - Amulungan - Rizal	9,178	12,777	3,914	25,869
7-1 Isabela Settlement, La Suerte Cluster	20,599	11,210	7,761	39,570
7-2 Isabela Settlement, Dipasivi Cluster	19,086	8,007	7,717	34,810
7-3 Isabela Settlement, Censa Cluster	18,151	11,139	11,581	40,871
8 - Minagbag	10,314	19,484	19,129	48,927
9 - Cabaruan	24,646	51,059	0	75,705
10 - Capirpirwan	19,901	5,257	4,603	29,761
11 - Fermeldy	1,490	1,388	1,610	4,488
12 - Luzon	8,496	19,191	0	27,687
13 - Progreso	9,062	9,394	12,528	30,984
14 - Yeban Norte/BenitoSoliven	6,108	12,480	5,433	24,021
15 - Canan	23,958	20,481	0	44,439
16 - Andarayan	114,324	10,236	0	124,560
17 - Bantug Petines	16,320	14,685	0	31,005
18 - Dalena & Simanu	13,929	19,806	15,396	49,131
19 - Dammao	86,755	4,340	0	91,095
20 - San Miguel (Burgos)	7,683	15,341	0	23,024
21 - San Ramon	13,003	6,821	0	19,824
22 - Viola Estate Cluster	12,925	16,403	0	29,328
2. Farmers Organization Development Plan	18,335	2,880	0	21,215
3. Rural Credit Plan	0	36,634	66,619	103,253
4. Management Capability Building Plan	12,840	1,200	0	14,040
5. Operation and Maintenance Equipment	1,178,098	0	0	1,178,098
6. Consultant Service Fee	797,305	89,258	445	887,008
Sub-Total	2,544,753	435,682	166,543	3,146,978
Administration Cost (8%)	203,580	34,855	13,324	251,759
Sub-Total	2,748,333	470,537	179,867	3,398,737
Physical Contingencies (10%)	274,833	47,055	17,987	339,875
Sub-Total	3,023,166	517,592	197,854	3,738,612
Price Escalation	444,439	292,378	330,479	1,067,296
<b>TOTAL</b>	<b>3,467,605</b>	<b>809,970</b>	<b>528,333</b>	<b>4,805,908</b>

Table 6-9-2 Operation and Maintenance Cost

(unit : '000 Peso)

Development	Short Term	Medium Term	Long Term	Total
1. ARC				
1 - Lapogan	356	978	2,087	3,421
2 - Quiling	7	47	140	194
4 - San Manuel	49	128	392	569
5 - San Miguel (Ramon)	107	291	780	1,178
6 - Amulungan - Rizal	29	151	472	652
7-1 Isabela Settlement, La Suerte Cluster	52	252	699	1,003
7-2 Isabela Settlement, Dipasivi Cluster	47	227	625	899
7-3 Isabela Settlement, Censa Cluster	38	232	723	993
8 - Minagbag	233	954	2,236	3,423
9 - Cabaruan	342	1,346	2,870	4,558
10 - Capirpirwan	96	191	488	775
11 - Fermeldy	6	21	87	114
12 - Luzon	27	161	550	738
13 - Progreso	31	131	510	672
14 - Yeban Norte/BenitoSoliven	17	110	462	589
15 - Canan	100	320	890	1,310
16 - Andarayan	706	2,179	4,480	7,365
17 - Bantug Petines	67	221	620	908
18 - Dalena & Simanu	292	523	1,348	2,163
19 - Dammas	685	1,721	3,500	5,906
20 - San Miguel (Burgos)	22	132	460	614
21 - San Ramon	33	159	400	592
22 - Viola Estate Cluster	40	220	590	850
2. Farmers Organization Development Plan	400	80	0	480
3. Rural Credit Plan	0	7,330	14,660	21,990
4. Management Capability Building Plan	0	0	0	0
5. Operation and Maintenance Equipment	379	1,811	4,008	6,198
6. Consultant Service Fee	0	0	0	0
Sub-Total	3,782	18,105	40,069	61,956
Physical Contingencies (10%)	379	1,811	4,008	6,198
TOTAL	4,161	19,916	44,077	68,154

## **Chapter7**

# **Justification of the Master Plan**

## Chapter 7 Justification of the Master Plan

This chapter verifies the appropriateness of the master plan from the following points of view. Firstly, the approaches taken in the plan are reviewed whether the means are adequate to achieve the purposes. It is then considered whether the technical levels of the projects are sound to the farmers beneficiaries. Thirdly, the project evaluation is conducted to look at their financial feasibility. The social impacts of the projects are also discussed. The initial environmental examination is finally done to confirm that the projects will have no serious environmental impacts on the areas.

### 7.1 Approaches

The main target of the ARC development was set as “the increase of ARB’s income”. The means to achieve the target were considered based on the current situations and problems of the area and ARBs, and the backgrounds of those problems. With the necessity, urgency and potentiality, the following means were proposed in the plan:

- Improvement of farm productivity thorough extension of appropriate technologies
- Reduction of cost of production through the reduction of hauling costs
- Improvement of selling prices of farm products through the improvement of the quality
- Improvement of access to financing and reduction of interest rates
- Improvement of stability of household economy through the introduction of income generating activities
- Strengthening farmers organizations to make sure the above objectives are attained
- Improvement of the quality of the supporting services through the institutional and organizational development

Taking the importance of each means into consideration, the Agriculture Development and Farmers’ Organization Development were considered as the core of the master plan. Agriculture development is obviously the most important as a means to raise income for the farmers who largely live on agriculture. The infrastructure plans, such as the Irrigation, Post-harvest and Farm-to-market Road Development Plans, are to support for the facilitation of the Agriculture Development Plan. Farmers’ organization development is another important means as they are the key recipients of those supporting services.

A variety of approaches are needed to meet the needs of ARBs who live in various socio-economic conditions. The Rural Credit Plan was considered to improve the economic conditions of the ARBs and farmers' organizations, which would then facilitate the Agricultural Development and Farmer's Organization Plans. The Rural Credit Plan is also expected to provide an opportunity particularly for the farmers and members of the farmers organizations who are already "motivated" to further develop themselves. In addition, the Plan was considered to take care of even the poor ARBs to prevent them from being trapped by further poverty. The Livelihood Development Plan has the similar objectives of the Rural Credit Plan, but concentrate more on agriculture activities easily possible in the areas such as livestock, Tilapia breeding, etc. Finally, the Management Capability Building Plan was included as a key to support agencies' and NGO's staff and ARBs for raising their management abilities. This Plan is significantly related to the success of all other development plans, from the fact that their capabilities are yet to be seriously improved.

It was pointed out that the many of the problems identified have the fundamental causes in the consciousness of the farmers and other people in the area. It was therefore considered to improve their consciousness at the early stage of the development, and the proposed plans are prepared based on the principle that the projects be commenced step-by-step with social preparation being as the first step. The implementation schedules of the projects in each ARC are accordingly determined based on the capability level of the beneficiaries.

Thus, the support services to be provided will differ ARC by ARC and also ARB by ARB, depending on their development stages. The higher-level support services will be concentrated on the excellent beneficiaries and organizations who have high abilities, strong motivation and willingness, by which the available resources will be effectively utilized. To show the benefits of being "excellent" beneficiaries is expected to be an incentive to other people.

## **7.2 Appropriateness of Technical Level**

The construction works of this project comprises construction plan of irrigation facilities, construction plan of the post-harvest treatment facilities, construction plan of the farm to market roads, etc.

The construction plan of irrigation facilities consists of construction of dams, pumping stations, and irrigation canals and ancillary facilities. Construction of Communal irrigation facilities is expected to be carried out taking full advantage of the

technical capability of the NIA-PIO. For the study of the foundation, selection of embankment materials, capacity of the spillway, etc. it is customary that the responsible people for dam design of the Project Development Department (PDD) of the NIA headquarters offer help. The NIA-PIO has a lot of experiences of constructing pumping stations in the Isabela Province. With respect to the construction technology of irrigation facilities the NIA, as the responsible organization for the construction of the irrigation facilities in the Philippines has sufficient experiences.

The post-harvest treatment facilities are used for the purpose of drying the cereals. The construction plan comprises construction of the sun-drying yard made of concrete, the multi-purpose pavement (MPP) with which the road is paved with concrete where the cereals are dried, and the cereal storehouse together with the sun-drying yard and the drying machine beside it. The sun-drying yard and the multi-purpose pavement are already being implemented by the LGU, the Barangay, etc. Also construction of the cereal storehouse is being carried out in the ARCs in the study area.

Construction of the farm to market roads occupies an important portion of the construction program presently in progress with the financial aid of the World Bank. The establishment of the plans and supervision of execution of construction are presently being performed successfully by the LGU centering on the implementation office situated at DAR MARO. The techniques expected to be introduced in the present plan are all already proven through actual experiences. Hence the technical level required in the development is considered to be appropriate.

### **7.3 Project Evaluation**

#### **7.3.1 Farm Budget Analysis**

The farm budget analysis for the 23 Objective ARC/Clusters is summarized as follows. (Refer to Tables J-1A&B to J-29A&B in Appendix)

Rice and corn, the two major crops in the area that are planted twice in areas where irrigation facilities are available provide substantial portion of farm income in the objective ARC. With few exceptions, most of crops and livestock production in the objective ARCs provides positive net production value. The exception is corn production at San Manuel ARC due to its low yield. Other crops are also produced in small scale in the area. Carabao and cattle, including pigs and poultry are kept in small number in the backyard. Based on available data, farm budget analysis was conducted for 27 farm enterprises and two agricultural-related micro-enterprises. Of

the 27 farm enterprises, four are livestock (hog fattening, cattle fattening and poultry) and Tilapia culture.

### **7.3.2 Financial Analysis**

The financial analysis of the proposed development of the 23 Objective ARC/Cluster expressed in terms of their individual Financial Internal Rates of Return (FIRR) is calculated based on the NEDA/ICC standard and shown in Tables J-31A to J-53A. That of the overall development is illustrated in Table J-54.

The analysis is based on the following information and assumptions:

- a) The cropping patterns suggested by the Project Agronomist, both for all and individual ARC.
- b) The production, cost and price data as in the budget analysis of individual crops and livestock mentioned above.
- c) The assumption that the various developmental efforts provided by the project, namely, irrigation facilities, rural credit, capability building of extension and development officers, post-harvest facilities, farm-to-market roads, and strengthening of farmers organization would be able to bring about increases in production and income of the targeted ARBs. Quantitatively, these are assumed to be an income increase by five (5) to ten (10) % annually from year 2 to year 5 of the development. Also, other benefits in terms of time and labor savings measured in terms of opportunity cost of labor are included.

The results of the analysis may be summarized as follows:

- a) The expected outcome of the proposed development in the various objective ARC would have a high percentage of success. This is expressed in terms of the expected Financial Rater of Return (FIRR) in each individual ARC. Most ARCs have FIRRs higher than 50 %. Only one, Dammas, has an FIRR of 29 % for the low case (5 % increase in benefit), and 43 % for the High Case (10% annual increase in benefit). All the FIRRs for individual ARC are shown in Table J-31A-J-53A. That for the overall development is shown in Table J-54A.

## **7.4 Social Impacts**

Apart from the direct benefits of the project as shown in the Farm Budget Analysis along with the FIRR and EIRR of each objective ARC as mentioned above, there also exist other forms of impact/benefits worthy of mentioning here.

### **7.4.1 Social Impacts (as identified in PDM)**



- a) Capability of the ARB to commit themselves to their development and to efficiently utilize and maintain the facilities given to them in a sustainable manner.
- b) Higher production and income as a result of group commitment to, and strong participation in, their own development is expected to set example for other dead (patay) cooperatives/associations to think of following the same footsteps.

#### **7.4.2 Indirect Benefits**

- a) Higher rural income is expected to lead to more application of productive inputs, and further increases in their production and income, less indebtedness and more savings, which can be used to increase both farm and non-farm production and household consumption.
- b) Higher rural production and consumption leads to higher production and income in other sectors.
- c) Higher overall income gives rise to higher consumption, production and employment, and hence more round of higher income of individuals, groups, and the nation as a whole, the so-called multiplier effects measured in terms of Provincial Income, Gross Regional Income, National Income, Gross Domestic Products, and Gross National Products.

Nevertheless, the indirect benefit one can think of being generated out of this project on Agrarian Reform Development in Isabela, which is only one among all provinces in the Philippines, are the following:

- a) More staple food for all households in Isabela. This refers specifically to rice and white corn.
- b) More inputs (yellow corn, rice bran, broken rice, etc) for feed industry and hence livestock as well as fisheries production in Isabela.
- c) Higher employment and income for those involved in the marketing and processing of agricultural produce from the ARC.
- d) Higher production and sales of all inputs used in agricultural production and livelihood programs in the Objective ARC; and hence increased employment, income and expenditure of those involved in producing and marketing them.
- e) Better opportunity for the people of Isabela to proceed further at higher level of development, which will bring them even higher income.

#### **7.5 Initial Environmental Examination (IEE)**

Some endangered flora and fauna's species such as Philippine Eagle, Giant Scops Owl, Tindalo, found in the Isabela province are living in limited areas in the Sierra Madre mountain range including Northern Sierra Madre Natural Park. The

endangered species are not reported in the plain areas where the objective ARCs are located. Also, the Isabela province has one natural park and some protected/conserved areas such as, protection forest and conservation forest areas for watershed. These limitation areas do not cover the objective ARC areas.

The proposed ARC development plan under this Study consists of the irrigation development, road development, post-harvest development, farm technology development, farmer's organization development, rural credit, and livelihood development plans and capability building plan within and around the residence areas in the objective ARC areas. The development plans are covered by the environmental checklist.

These development plans will not have serious impact on the present environment condition, because the development plans proposed are small in scale. Consequently, Environmental Impact Assessment (EIA) is not necessary. The impacts of the proposed ARC development plans are presented as follows: (refer to Table 7-5-1)

(On Socio-Economic Environment)

- Income gap is observed between developed and undeveloped ARCs. However, the proposed development plans when implemented will reduce the gap.
- Existing system/custom and social structures will gradually be changed by the farmer's organization development plan. However, since the development plan will only strengthen the existing multi purpose cooperatives, the impact may not be extensive.
- Allocation of irrigation water is needed with the construction of new canal. Adjusting the cropping season within the IAs will solve the problem of water allocation.

(Natural Environment)

- Dam constructions will create impact on the vegetation and diversity of species around the reservoir area. However, these are limited because of the small scale of the dam.
- Construction of reservoir will create impact on surface runoff. However, this will be limited due to the small capacity of the reservoir.
- Construction of reservoir will create impact on sedimentation in the creek. However, this will be solved because the proposed storage capacity of reservoir will take into consideration soil deposit.

If the existing farming practices will continue, it will have a negative impact on the existing environment. The following environmental conservation measures will be considered in the implementation of the proposed development plans:

- Extension of Integrated Pest Management (IPM) to decrease utilization of chemicals and pesticides.
- Conversion of perennials crops from existing crops where soil erosion occurs to stabilize farm management and prevent soil erosion.
- Decrease of soil fertility will be prevented by crop diversification from corn mono-cropping.

**Table 7-5-1 Environmental Checklist**

Environmental Issues	Activities of Construction	2. Irrigation Development Plan				3. Post-harvest Development Plan			4. Farm-to-market Road Development Plan				5. Farmers' Organization Development Plan	6. Rural Credit Plan	7. Livelihood Development Plan	8. Management Capability Building Plan	
		1. Agriculture Development Plan	Construction of dams	Construction of pumping stations	Canalization (rehabilitation and construction)	Installation of small-pumps	Construction of solar dryer	Provision of mechanical dryer	Construction of warehouse	Construction of FMR	Construction bridges	Construction of box culvert/RC pipes	Rehabilitation of roads				
<b>I. Socio-economic Environment</b>																	
<b>1. Social Life</b>																	
<b>(1) Living</b>																	
- Planned resettlement		/				/			/								
- Non-spontaneous resettlement	C	/				C	C	C	C	C	C	C	C	C	C	C	C
- Change in life style	C	/				C	C	C	C	C	C	C	C	C	C	C	C
- Friction among inhabitants	C	/				C	C	C	C	C	C	C	C	C	C	C	C
- Indigenous people / Minority / Nomad		/				/			/								
<b>(2) Population</b>																	
- Population increase		/				/			/								
- Sudden change in population composition		/				/			/								
<b>(3) Economic activities</b>																	
- Shift of economic activity base	C	/				C	C	C	C	C	C	C	C	C	C	C	C
- Shift in / economic activities unemployment	C	/				C	C	C	C	C	C	C	C	C	C	C	C
- Expansion of economic gap	B	/				C	C	C	C	C	C	C	C	B	B	B	B
<b>(4) Institution / Custom</b>																	
- Resettlement of water right / fishery right		/				/			/								
- Change in social structure (e.g. organization)	C	/				C	C	C	C	C	C	C	C	B	B	C	C
- Restructuring of existing system / custom	C	/				C	C	C	C	C	C	C	C	B	B	C	C
<b>2. Health / Sanitation</b>																	
- Increase in pesticide use	C	/				/			/				/				
- Outbreak of endemic disease	C	/				C	C	C	C	C	C	C	C	/			
- Spread of infectious illness	C	/				C	C	C	C	C	C	C	C	/			
- Accumulation of residual toxic (e.g. pesticides)		/				/			/				/				
- Increase in waste excrement		/				/			/				/				
<b>3. Historic spot / Cultural heritage / Scenery</b>																	
- Damage and destruction of historic spot / cultural heritage		/				C	C	C	C	C	C	C	C	/			
- Loss in important landscape or scenery	C	/				C	C	C	C	C	C	C	C	/			
- Impact to buried cultural assets		/				C	C	C	C	C	C	C	C	/			

note ; A) major impact, B) small impact, C) expected that serious impact will not occur, or not clear  
 / : not applicable

(Continue)

Table 7-5-1 (Continued)

Environmental Items	Activities of Construction				2. Irrigation Development Plan			3. Post-harvest Development Plan			4. Farm-to-market Road Development Plan				5. Farmers' Organization Development Plan	6. Rural Credit Plan	7. Livelihood Development Plan	8. Management Capability Building Plan
	1. Agriculture Development Plan	Construction of dams	Construction of pumping stations	Canalization (rehabilitation and construction)	Installation of small-pumps	Construction of solar dryer	Provision of mechanical dryer	Construction of warehouse	Construction of FTMR	Construction bridges	Construction of box culvert/RC pipes	Rehabilitation of roads						
<b>II. Natural Environment</b>																		
<b>4. Valuable life / ecological area</b>																		
- Change in vegetation	C					C	C	C	C	C	C	C					C	
- Impact to scarce or specific animal or plant species																		
- Diversity of species	C					C	C	C	C	C	C	C					C	
- Penetration / Propagation of a harmful life	C								C	C	C	C					C	
- Extinction of wetland / peat bog																		
- Extinction of tropical forest / wild land																		
- Destruction of mangrove forest																		
- Destruction of coral reef																		
<b>5. Soil / Land</b>																		
<b>(1) Soil</b>																		
- Soil erosion	C																	
- Salinization of soil	C																	
- Fall in soil fertility	C																	
- Soil contamination	C								C	C	C	C					C	
<b>(2) Land</b>																		
- Land degradation (including desertification)	C								C	C	C	C					C	
- Hinterland degradation	C								C	C	C	C					C	
- Land subsidence	C					C	C	C	C	C	C	C					C	
<b>6. Hydrology / Water quality</b>																		
<b>(1) Hydrology</b>																		
- Change in surface runoff	C					C	C	C	C	C	C	C					C	
- Change in groundwater runoff / level	C					C	C	C	C	C	C	C					C	
- Inundation / Flood	C								C	C	C	C					C	
- Soil deposit	C								C	C	C	C					C	
- Fall in riverbed																		
- Shipping																		
<b>(2) Water quality / Water temperature</b>																		
- Water pollution / degradation	C					C	C	C	C	C	C	C					C	
- Eutrophication	C					C	C	C	C	C	C	C					C	
- Change in salt-water																		
- Change in water temperature	C					C	C	C	C	C	C	C					C	
<b>(3) The air</b>																		
- Air pollution	C					C	C	C	C	C	C	C					C	

note ; A) major impact, B) small impact, C) expected that serious impact will not occur, or not clear

▨ : not applicable

## **Chapter8**

### **Selection of Model ARCs**

## **Chapter 8 Selection of Model ARCs**

### **8.1 ARC Classification Instrument of DAR**

The DAR has newly developed “The ARC Classification Instrument<sup>1</sup>” according to the Guideline for ARC Classification explained in Chapter 5. This method classifies ARCs into prime agricultural, in-between and marginal areas through integration of the various parameters that cover economic, social, political and ecological factors of ARCs. The number of the parameters is more than 20, including yields of various crops, heads of livestock, household income, population density, accessibility, LTI status, number of NGOs, number of peoples' organizations, soil types, climate, ecosystems, etc. The results of each parameter are categorized into “prime”, “in-between” or “marginal” according to the preset standard values. Finally, the ARC is classified into the one whose counts exceed the other two. For example, the ARC will be classified into marginal if the total number of the “marginal” counts from the parameters is more than the numbers of the “prime” and “in-between” counts.

The DARPO has pre-tested the ARC Classification Instrument to six (6) ARCs in the province and classified them into the three (3) areas mentioned above. The results were referred by the Study Team when the criteria of ARC Classification for this master plan, as mentioned below, were formulated.

### **8.2 Criteria for Selection of Model ARCs for Feasibility Study**

#### (1) Criteria for ARC Classification

According to the basic approaches of development outlined in Chapter 5, the following criteria are considered to classify ARCs into the prime agricultural, marginal and developing areas:

- a) Average yield of major crop (rice or corn) in the target barangay
- b) Existence of economic infrastructures, i.e. irrigation facilities (NIS or CIS)<sup>2</sup> in the target barangay
- c) Time required reaching the center of the target barangay from the adjacent main or paved road, which is measured by distance of the existing access road divided by the average vehicle speed, determined by the quality of the access road

It should be noted that there are 14 barangays in three (3) Clusters in Isabela Settlement ARC. The number of the ARBs in this ARC is outstanding since it occupies 30 % of the total ARBs in the Study Area. In addition, the areas of each cluster are already wide, the characteristics of which differ considerably. This makes classification difficult, and therefore each cluster of Isabela Settlement ARC is independently considered for the following clustering and classification. (Refer to

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<sup>1</sup> As of December 1999, this was yet to be approved by the Secretary of the DAR.

<sup>2</sup> Limited to NIS or CIS, as those are the irrigation facilities supported by the government.

Tables 8-2-1 and 8-2-2).

## (2) Clustering the Classified ARCs

The ARCs classified above are further clustered from the point of agriculture development as follows:

- a) The approaches for agriculture development should be different depending on the agricultural potentials of each area. This will be determined based mainly on the geographical conditions of the areas, and ARCs are further clustered into the following three (3) geographical groups: 1) almost flat, 2) mixture of flat and hilly (MFH) or 3) almost hilly areas.
- b) Agricultural development will also be different according to the potentiality of irrigation development in the area, and whether irrigation facilities are already provided or not. The status of irrigation development at present and in future is therefore considered.

### 8.3 Selection of the Model ARCs

The ARCs for the Feasibility Study are selected from each cluster to be a development model of the cluster to which the ARC belongs. The followings are considered:

- a) In principle, the ownership of the land, distributed to farmers through the agrarian reform process, should be kept by the same farmers; that is, transfer of land ownership should not happen. The support services should be directed to the farmers maintaining their farms faithfully, and the indicator of "LTI (Land Tenure Improvement) - Still Maintaining Ownership" rate is used to assess this situation of each ARC.
- b) The existing farmer organizations, as the recipients of the supporting services, should be capable and committed to pursue the development objectives of the communities. This can be assessed based on the degree of strategic vitality of each organization obtained by the Diagnosis of Corporate Culture (DCC). If the rate of the vitality of an organization is high and continuously moving upwards, the organization is considered to be able to well manage and maintain the services provided.
- c) To make the impacts of the proposed development plans significant, there should be a number of the expected beneficiaries. This is obviously important to keep the economic value of the plans high. The ARCs, therefore, having the larger numbers of the population as well as ARBs should have higher priority to be selected.

Eventually, 21 ARCs were clustered into five (5) groups, and the following ARCs were selected from each cluster as the model ARCs: (refer to Table 8-3-1)

- i) Quiling – Prime Agriculture Area, flat, irrigation facilities were already provided (Group A)
- ii) Lapogan – Developing Area, flat, potentiality of irrigation development is high but facilities are not yet fully provided (Group B)
- iii) Minagbag – Developing Area, mixture of flat and hilly, potentiality of irrigation development is high but facilities are not yet fully provided (Group C)
- iv) San Manuel – Developing Area, mixture of flat and hilly, potentiality of irrigation development is low (Group D)



- v) La Suerte (in Isabela Settlement) – Marginal Area, almost hilly, potentiality of irrigation development is low (Group E)

Table 8-2-1 ARC Classification by MC 5 Classification

ARC/Cluster		Average Yield of Major Crop (cavan/ha) Upper: rice (d-w) Middle : com (d-w)	Existance of Economic Infrastructure (%) (- : no potential of irrigation development)	Time Required to Reach Barangay (hr)	Classification
No.	Name				
1	Lapogan	80-80	15	0.2	D
		75-75			
		D	D	P	
2	Quiling	108-80	100	0.13	P
		84-63			
		P	P	P	
4	San Manuel	108-80	-	0.47	D
		84-63			
		M	D/M	D	
5	San Miguel	87-127	80	0.17	P
		78-78			
		P	P	P	
6	Amulungan-Rizal	90-80	100	0.17	P
		-			
		P	P	P	
7-1	La Suerte Cluster	67-64	-	X	M
		71-75			
		D	D/M	M	
7-2	Dipasivi Cluster	47-34	-	X	M
		80-77			
		D	D/M	M	
7-3	Cenea Cluster	47-42	-	X	M
		71-68			
		D	D/M	M	
8	Minagbag	100-75	90	0.01	D
		65-86			
		D	P	P	
9	Cabaruan	69-64	0	0.3	D
		74-74			
		D	D	P	
10	Capirpiriwan	64-84	0	0	D
		74-78			
		D	D	P	
		78-82			
		P	P	P	

ARC/Cluster		Average Yield of Major Crop (cavan/ha) Upper: rice (d-w) Middle : com (d-w)	Existence of Economic Infrastructure (%) (- : no potential of irrigation development)	Time Required to Reach Barangay (hr)	Classification
No.	Name				
11	Fermeldy	-	0	0.15	D
		84-108			
		D	D	P	
12	Luzon	148-103	100	0.03	P
		78-82			
		P	P	P	
13	Progresso	46-32	-	X	M
		66-61			
		D	D/M	M	
14	Yeban Norte/Benito Soliven	98-98	-	0.33	D
		80-80			
		P	D/M	P	
15	Canan	129-120	100	0.07	P
		-			
		P	P	P	
16	Andarayan	90-85	0	0.5	D
		78-75			
		P	D	D	
17	Bantug Petines	105-100	100	0.33	P
		-			
		P	P	P	
18	Dalena & Simanu	72-56	100	1	D
		70-70			
		D	P	D	
19	Dammao	74-78	3	0.23	D
		72-72			
		D	D	P	
20	San Miguel Burgos	56-53*	100	0.17	P
		72-78			
		P	P	P	
21	San Ramon	120-110	100	0.4	P
		96-120			
		P	P	P	
22	Viola Estate Cluster	-	0	0.7	D
		94-94			
		P	D	D	

Note: In the lowest rows of each ARC, the first classification is indicated according to the "Standards for MC5 Classification" shown in Table 8-2-2 (P=Prime Agricultural Area, D=Developing Area, M=Marginal Area). The final classification is done based on the first classification and indicated in the right columns.

\*: Low yield because irrigation water is not properly maintained at the upper stream.

Table 8.3.1 Clustering and Selection of the Model ARCs

MC 5 Classification Group No. n (*1)	Values for Grouping			ARC		Values for Selection			
	Geographic Conditions (*2)	Status of Irrigation Development (*3)	No.	Name	LTI(%)	Farmer Organization (*4)	Population	No. of ARBs	
P	F	PF	2	Quiling	100	HU	1,079	145	
	F	PI	5	San Miguel	51	LD	3,231	85	
	F	PF	6	Amulungan-Rizal	65	LI	8,269	202	
	F	PF	12	Luzon	55	LD	1,552	164	
	F	PF	15	Canan	-	HL	1,291	146	
D	F	PF	17	Bantug Petines	80	HU	1,606	222	
	F	PF	20	San Miguel Burgos	100	HL	1,082	106	
	F	PF	21	San Ramon	98	HL	829	74	
	F	PI	1	Lapogan	100	HU	2,251	274	
	F	PI	11	Fermely	81	HI	1,438	439	
D	F	PI	16	Andarayan	100	HU	1,149	61	
	F	PI	19	Darmao	100	LI	469	123	
	F	PI	22	Viola Estate Cluster	100	HL	3,340	84	
	A	PI	8	Minagbag	90	LU	2,259	90	
	A	PI	9	Cabaruan	85	HD	1,085	252	
D	A	PI	10	Capirpinwan	52	HD	2,772	81	
	A	PF	18	Dalena & Simanu	28	LI	3,690	816	
	A	N	4	San Manuel	82	HU	1,164	134	
D	A	N	14	Yeban Norte/Benito Soliven	52	LI	3,361	766	
	H	N	7-1	La Suerte Cluster	100	HU	3,894	551	
M	H	N	7-2	Dipasivi Cluster	94	HU	1,620	311	
	H	N	7-3	Cenea Cluster	96	LL	4,773	1,989	
	H	N	13	Progreso	100	LU	394	270	

Note(\*1): P=Prime Agricultural Area, D=Developing Area, M=Marginal Area

(\*2): F=Almost Flat Area, A=Mixture of Flat and Hilly Area, H=Almost Hilly Area

(\*3): PF=There is potential and almost fully provided. PI=Potential, but insufficiently provided. N=No potential.

(\*4): HU=High strategic vitality and still moving upwards. HL=High vitality and maintained. HD=High vitality but moving downwards. HI=High vitality but inactive. LU=Low strategic vitality and but moving upwards. LI=Low vitality and maintained. LD=Low vitality and moving downwards. LL=Low vitality and inactive.

## **Chapter9**

# **Conclusions and Recommendations**

## Chapter 9 Conclusions and Recommendations

1. The most important issue for ARC development is that the incomes of many ARBs, the CARP beneficiaries, remain low even though the considerable amount of farm lands was distributed. The record of land distribution indicated that the Region II, to which Isabela Province belongs, was the advanced area to be ranked the third among 15 regions in the country. The supporting services to the farmers, however, are extremely limited, and their living standards are still low. In the Study Area, the supports of the government or NGOs cannot catch up with the pace of the land distribution, and the impacts are not as strong as expected. Most importantly, the strategies and structures of the supporting services are still primitive.
2. Most of the farmers are not self-reliant and depend on the private lenders to continue their farming, paying enormously high interest rates. The private lenders have established firm networks among them, which are strongly supported by the rice cartel. The relationship between the private lenders and the farmers are deeply rooted in the area, and therefore the government as well as many farmers seem to resign themselves to the situation. In fact, there are few farmers who are highly motivated to break this barrier, and not many farmers are organized to work collectively for the better life. The strong leadership of the government, necessary to back up this kind of the effort, cannot be seen either. Thus, it should be acknowledged that the current situation is extremely serious, and the integrated and systematic strategies for the improvement of the situation, with the long-term vision, must be worked out.
3. The study team identified the problems in the area from various points of view, and analyzed the backgrounds of those problems on the reasons why they have happened. As a result, the root causes of the problems can be largely divided into three categories; the lack of facilities, socio-cultural specifics, such as the consciousness of the farmers in the area, and institutional limitations of the government and other organizations providing the support services. The master plan therefore includes not only the direct measures for raising ARB's income, but also the one for improving the consciousness and capabilities of the farmers and farmers organizations. Likewise, the strengthening of the government structures and institutions are equally taken into account.
4. The master plan proposes eight development approaches to solve the problems.

Among the development plans, Agriculture Development and Farmers' Organization Development Plans are of most importance and the core of ARC development. To make the roles of each plan clear, Agriculture Development, Irrigation Development, Post-harvest Development and Farm-to-market Road Development Plans are considered as a package, and called as "Agricultural Development Scheme." Farmers' Organization Development Plan is considered as "Farmers' Organization Development Scheme." Rural Credit, Livelihood Development and Management Capability Building Plans are called as "Development Support Scheme."

5. The implementation schedules of the projects in each ARC are prepared according to the linkages among the development plans, the characteristics of the areas and the needs of social preparation. The characteristics of the areas determine the approaches to raise the income. The different strategies were formulated for several areas, referring to the DAR's guideline for ARC Classification. Regarding the social preparation, raising consciousness and capabilities of the beneficiaries and the officials of the related agencies are firstly addressed in the implementation of the development plan. Other development plans will be implemented step-by-step after the raising of consciousness was achieved. It is therefore recommended that those principles of the master plan be understood well by the DAR and related agencies, and it is important that the objective of ARC development will not be achieved merely through the construction of the facilities or the provision of technologies.
6. From the background analysis, the essential issues of the development were recognized as follows: "The farmers in the area have the sense of virtue consisted of 'fair', 'share' and 'care'. When the sense of virtue is maximized, farmers are willing to manage the common resources collectively, and as a result, the sustainability of the projects can be assured. In the study area, farmers lack the sense of virtue and therefore many development problems took place." It will not be possible to achieve the development target unless the above essential issues are improved. On the contrary, development itself might worsen the situations. The master plan includes the measures that the implementation of the projects will make the farmers feel 'fair', 'share' and 'care', which would then raise their commitments to the development. It is recommended that the special attention be paid to what kinds of measures are included in each development plan for dealing with the essential issues, and keep those in mind even during and after the implementation.
7. Like the current CARP implementation, the DARPO is the leading agency for the

implementation of this master plan, and the DARCO and DARRO supervise the DARPO. Since the capability of the DARPO is yet to be improved, the Project Management Office (PMO) is proposed to be established in the DARPO to be directly responsible for the implementation and management of the projects. Moreover, the plans for the training intending to raise the organizational capabilities, as well as consultants specialized for institutional development and project management, are also proposed. It is crucial to assign a highly capable and well experienced person as the director of the PMO if the project should be successful. In addition, the selection of the project staff and the recruitment and positioning of MAROs/DFs should seriously be considered based on their abilities, suitability and motivation.

8. Since the CARP is the national program, LGUs are not directly involved in the CARP, although they are responsible for the development of barangays in their jurisdiction. It can be appreciated that the distribution of land has significantly been progressed by the strong leadership of the DAR, but the supporting services to the farmers should not lack the participation of LGUs and government's local offices, who are most aware of the local conditions. For the implementation of this master plan, the roles of all the related organizations are made clear, and the mechanisms to call active participation of LGUs are considered. To devolve some authorities to LGUs goes along with the decentralization policy of the government, and the master plan acknowledged its necessity and importance. It is therefore proposed to cooperate closely with LGUs for maximizing their commitments to the plan.
9. It will contribute to raise the sense of ownership of the beneficiaries if they adequately participate in the process of the development. At the same time, the capabilities of the farmers towards self-reliant are supposed to be enhanced. Those issues are part of the key factors to assure the sustainability of the development. The master plan requires the ARBs to participate actively in the development from the planning stage. To have them participate, the cooperation between DFs and barangay officials, as a contacting point between administration and beneficiaries, is crucial. Their capabilities and commitments are therefore important, and the immediate and appropriate actions will be needed if any problem arises on them. The NGOs working in the area, although the number is limited, should be utilized as much as possible for this kind of the supports.
10. It was confirmed that the master plan is justifiable as highly appropriate for the development of the ARCs in the study area. The points considered were: the approaches as a means to solve the problems, technical suitability of the projects for



the level of the farmers and extension workers, financial feasibility, and social and environmental impacts. Since urgent measures are required, it is proposed to source the funds necessary to implement the projects, from the donors including Japan. The form of assistance could be either grant aid or loan. One of the principles of the master plan was to implement all the eight development plans for achieving the target of ARC development. Therefore, it is highly suggested to consider all the proposed plans as a package.

11. 21 ARCs were classified into five groups according to their areas' characteristics and the potentials of agriculture development. The model ARCs were selected from each group, for which the feasibility study was conducted. Since those ARCs should be able to present good lessons, one of conditions for the selection was that the models have higher capabilities than other ARCs in the same group. It is recommended that the mechanisms be established for transferring the experiences accumulated in the model ARCs to other ARCs. In principle, the master plan assumes the implementation of the projects take place in 21 ARCs simultaneously. If the above transferring mechanisms can be established, however, it could be considered to concentrate all the efforts on the model ARCs first for accumulating the know-how as much as possible; the projects are implemented only in those ARCs, or experts and consultants concentrate on those ARCs while the implementation takes place in all ARCs.
12. The implementation of the infrastructure projects are scheduled based on the assumption that it would take considerable amount of time until the situations of the responsible farmers' organizations are improved. It might however be sooner to achieve that, if capable farmer leaders appear in the course of the development, or other positive cases take place. It is therefore possible for not only the model ARCs but any ARC that the projects are implemented much earlier than this plan. Those projects are expected to generate some income in the short period, which would then motivate the farmers to commit themselves further to the development.
13. The social preparation of establishment of rule and/or regulation in MPCIs and training of members, and microfinance should be urgently carried out in the model ARCs/Cluster. MPCIs in other ARC/Clusters as a recipient of various assistance from agencies and NGOs, should be effectively strengthened by applying the results and implementation ways to other ARCs/Clusters. After strengthening these MPCIs, the sustainable development of ARCs and expansion of MPCIs' activities

would be achieved. Consequently, the stable and strong MPCCI would be expected. For this purpose, the technical assistance of foreign countries should be given.

14. The concern of agrarian reform has mostly been the quick distribution of lands to farmers. It is now proposed to pay more attention to improve the quality of the supporting services; for example, the impacts of training programs, but not merely the number of training conducted, should be more seriously considered. There are still many farmers in the country awaiting for the land distribution, and it will be significantly useful for them as well as the related agencies to have this kind of the master plan which aims to raise the farmers' income through the structures that can provide the appropriate support services. In this regard, this master plan is considered not only as the one for 21 ARCs but also as the model for the ARC development in the country.