

BASIC DEVELOPMENT CONCEPTS

CHAPTER 4

STUDY ON DEVELOPMENT FOR REACTIVATION
OF PRODUCTIVITY AND POVERTY REDUCTION
IN THE CENTRAL-SOUTHERN REGION
OF THE REPUBLIC OF ECUADOR

- FINAL REPORT -

August, 2005

CHAPTER 4 BASIC DEVELOPMENT CONCEPTS

4.1 Potentials on Development

Taking account of the analysis of Chapter 3, the potentials of the Study Area on intensification of productive activities and poverty reduction are summarized with regard to “Natural Environment” and “Socio-economy”, as described hereinafter.

Natural Environment:

The geography of the Study Area is advantageous as a base for supply of milk, dairy products and highland vegetables to the leading consumption centers in coastal area. And, in so far as environmental aspect is concerned, an analysis was made from the viewpoint of rational conservation of regional natural resources; the area is located on highland area where vegetation is not likely to recur easily, but basic requirements for conservation of natural resources have been met owing to not only spontaneous efforts of local people but also sustainable activation for reforestation by CREA and NGOs; local people are well aware of the importance for environmental conservation, which together with fostering adequate environmental education is a positive factor on sustainable environmental conservation.

Social and Economic Conditions:

It is assessed that the Study Area enjoys socially high potentials, because trunk roads and electric supply networks are relatively developed and diligent attitude and willingness for cooperativeness of the local people are observed, which shall contribute to development of social infrastructure. In addition, the existence of *Minga*, a traditional cooperative work system of community in the mountain areas is a positive factor. On the other hand, as for economic potentials, a variety of natural condition of the Study Area, especially the climate suitable for production of highland vegetables, flowers and Andean fruits as well as for production of milk in mountainous zone, contributes the area to raising farm income that is the key factor for poverty reduction; besides, traditional handicraft industry represented by manufacturing of Panama hats creates employment opportunities, playing a positive role in poverty reduction; furthermore, subject to laying out of the overseas remittance from migrant workers, an attempt for investment by local people by themselves may be embarked.

Table: Potentials on Intensification of Productive Activities and Poverty Reduction

Categories	Potentials
Natural Environment	
Geographical Position	<ul style="list-style-type: none"> • Shorter distance to the city of Guayaquil, the leading consumption center of the country • To be adjacent with the Republic of Peru, partner country of foreign trade
Environmental Factor	
- General Aspects	• Basic information and data on environment are compiled.
- Reforestation	<ul style="list-style-type: none"> • Bases for reforestation are structured by CREA and NGO-related organizations. • CREA is equipped with farms (nurseries, model planting gardens, orchards, etc.), which shall serve development of reforestation project. • Awareness of local people for reforestation projects is elevated.
- Conservation	• Eligible areas for protection and conservation are identified.
- Miscellaneous	<ul style="list-style-type: none"> • Local people are highly aware of the environmental conservation. • Enlightening education on environmental conservation is in practice.
Social and Economic Condition	
Social Condition	
- General Aspect	<ul style="list-style-type: none"> • Considerable amount of overseas remittance from migrant workers is in flow, because the area is located as a core area for emigration of residents in search of employment opportunity • To enable introduction intensive farming owing to high population density. • High education level and high cultural standard lead to introduction of renovated agriculture. • Less dependence on the central government and willingness of local people on participation of development activities. • High diligence of local people. • Basic social information and data are compiled.
- Social Infrastructure	<ul style="list-style-type: none"> • Development of roads network at canton level has been made in a satisfactory manner. • Adequate level of development for electricity supply network in rural area.

Development	<ul style="list-style-type: none"> Regional development corporation in charge of infrastructure development in urban area is in operation.
- Organizations	<ul style="list-style-type: none"> Community level organization for cooperative work system called “<i>Minga</i>” is active. <i>Minga</i> is involved in development of infrastructure at communities. An experience in cooperative work raises awareness for mutual support among people. Cooperation with other communities through the activities of <i>Minga</i>.
Economic Factor	
- Basic Economic Infrastructure	<ul style="list-style-type: none"> Airport and trunk road network, basic infrastructure for logistics, are developed. Industrial organizations are fairly developed. CREA, INIAP, Universities and NGOs, public-supporting agencies for industrial sector, are active. Basic information and data on economic sector are compiled.
- Agriculture	<ul style="list-style-type: none"> Advantageous location for production of highland vegetables, flowers and Andean fruits. Crop cultivation technology on vegetables production is developed. Basic conditions as a flower cultivation region are being arranged. Andean fruits cultivation technology is consolidated.
- Livestock Farming	<ul style="list-style-type: none"> Advantageous as milk production region. Unit yield of milk is elevated. Pasture grows throughout the year. Basic requirements for development of dairy products processing industry are met.
- Agro-industry	<ul style="list-style-type: none"> High value-added raw materials for processing industries are supplied from agricultural and livestock sectors. Folk handicraft manufacturing has been developed traditionally. A number of residents are employed by this sector.

4.2 Constraints on Development

The constraints confronting the Study Area in attainment of poverty reduction and intensification of productive activities, in particular those discouraging rational use of the potentials of the Study Area have been compiled and analyzed as described hereinafter.

No effective measure for improvement of the agriculture and livestock sectors has been taken in the area in question for a long time, which has forced farmers in the area to adhere to conventional farming practice with input of low-productive varieties of crops. In addition, even though under unfavorable land conditions, neither effective land use nor crop cultivation according with land suitability has been put into implementation. Under such circumstances for agricultural and livestock production, farmers in the area engage in extensive and low-productive farming at limited size of farm, which resulted in lowered unit yield of crops leading to “Depressed farm income”. In sum, this farming practice constitutes one of the major factors for driving farmers into destitute conditions.

Folk handicraft manufacturing is regarded as a traditional industry in the Study, but the products made by destitute strata remain handicrafts of rural standard depending on outmoded technologies and thus are featured by inferior quality in materials, these products are less appreciated at the market and are purchased by middlemen at an extremely low price. Non-agricultural sector promising farmers part-time income has not been developed and farmers’ income stemmed from non-agricultural sector is depressed. This unfavorable situation may be attributable to under-development of markets, absence of public supporting services, lack of cooperative forwarding system and so on.

Apart from “Depressed farm income” and “Farmers’ income stemmed from nonagricultural sector is depressed”, social and economic infrastructure such as development of water resources and traffic network within the Study Area, basic factor for raising farm productivity, is under-developed. Furthermore, the trend for depopulation of adults as migrant workers overseas is likely to decrease labor force of the region, which, in turn, limits the service range of traditional activities in rural areas such as: *Minga* (Labor services without remuneration) and *Cambiamanos* (Mutual aid); as a consequence, “Worsening of living conditions” predominates.

Due to progress of disordered agricultural and livestock development as well as practice of forest fires, land resources to be used for agricultural and livestock purpose are being deteriorated and natural

resources in general are also vulnerable to being devastated. Under these circumstances, without proper land use and river basin conservation measures, “Exacerbated natural environment due to disordered land use”.

Table: Problems Analysis

Poverty is not reduced/Productive activities are not intensified	Worsening of living conditions	Delayed development of basic infrastructure	Insufficient provision of supporting services of the Central Government		
			Allocation of budget for development under limited national budget is deficient and tends to decline.		
			Insufficient application of <i>Minga</i> -related activities		
		Rural society is being disrupted	Depopulation in rural area is in progress due to decline of labor force caused by emigration of adults as migrant workers	Lack of opportunities for employment	
				Range for <i>Minga</i> -related activities is limited	
		Ineffective use of overseas remittance from migrant worker	Lack of information on investment opportunities		
			Educational level is low		
	Depressed Farm Income	Low productivity in agriculture and livestock farming	Women engaging on a variety of activities play core role in farming		
			Ineffective land use	Rotational farming between crop production and livestock farming is not realized	
				Extensive crop cultivation prevails	
			Inadequate agricultural technologies and low productivity among small and marginal farmers	Extension services of CREA and INIAP are rendered in unsatisfactory manner	
				Conventional farming practice is predominant	
			Lowering in fertility of farmlands	Inadequate application of fertilizers	
		Improved varieties of crops are not introduced			
		Absence of diversification and combined farming in farm administration	Supporting services of CREA and INIAP are rendered in unsatisfactory manner		
			Lack of relevant information		
		Poor land conditions	The majority of farmers suffer from limited size of farmland located at slope area		
			Limited size of farmland	Ineffective use of agricultural and grazing lands	
			Lack of infrastructure	Insufficient provision of government’s technical assistance	
	Unsatisfactory public supporting services under limited government budget				
	<i>Minga</i> -related activities are not conducted in effective manner				
	Farmers’ income stemmed from nonagricultural sector is depressed	Under-development of competitive non-agricultural sector	Government’s budget is not sufficiently allocated to encouragement of industrial sector		
			Absence of an organization in charge of promotion for strategic agro-products		
Distribution of goods with other regions is not made smoothly			Marketing condition is unconsolidated		
			Cooperative forwarding of products is not realized		
			Heavy dependence of forwarding on middlemen		
Absence of agro-products in high repute			Absence of an organization in charge of marketing		
		Compiled economic and marketing information are not used effectively			
		Adequate farming technologies on strategic agro-products are in need			
Under-development of agro-products processing industry		No opportunity for value-added of agro-products			
		Under-development of marketing infrastructure			
Lack of opportunity for investment of capital	Under-development of agro-products processing industry	Unsatisfactory linkage among agriculture/livestock, processing industry and other industries			
		Absence of technology for manufacturing of high-value products			
Exacerbated Natural Environment due to Disordered Land Use	Disordered development of agricultural and grazing lands	Agricultural credit system is not adequately operated			
		Overseas remittance of migrant workers is not used effectively			
	Continuous practice of forest fire	Absence of land use plan according with land suitability			
		Environmental education is unsatisfactory			
	Insufficient reforestation	Lacks of investment fund for reforestation.			
		Reforestation methodology at economical cost is not introduced			
		Inefficient use of CREA’s facilities			
	Inadequate management of farmlands	Combined farming of crop cultivation with cattle farming is not introduced			
Farming oriented to soil conservation is not in practice					

The above-mentioned problems: “Depressed farm income”, “Farmers’ income stemmed from non-agricultural sector is depressed”, “Worsening living conditions” and “Exacerbated natural

environment due to disordered land use” are closely inter-related with insufficient provision of public supporting services and adherence of farmers to conventional farming practice suffered from low productivity. An allocation of budgetary allocation of the central government tends to be declined and it is presumed that financial support for the agricultural sector should be limited in the future. So as to attain poverty reduction, it is prerequisite to strengthen technical and financial assistance of the public sector to local people and to take measures for empowerment of local people for productive activities.

4.3 Basic Development Concepts

4.3.1 Conditions for Formulation of Basic Development Concepts

The National Development Plan 2003 - 2007 envisages such intensification policies on agricultural and livestock sector such as: consolidation of the sector’s competitiveness, support to marketable agro-products and agricultural processed at international markets within context of international negotiation, regional development, agricultural and livestock development and promotion for agro-forestry, agro-processing industry and irrigation system and capacity building of public agencies in charge of institutional services, and basic development concepts in this Study shall be forged in line with the said intensification policies of the sector. On the other hand, these basic development concepts shall contain such contents as are applicable to other poverty-dominant regions in Ecuador except for the Study Area.

The problems analysis described before disclosed that the problems lie on limited farm size together with poor soil conditions and irrational use of physical resources of the region where destitute condition prevails due to deficient supporting services of the public sector to the regions. It was also revealed that the said supporting services of the public sector would not be improved apparently in the future. So as to alleviate such constraint and to attain poverty reduction, it is prerequisite to take a measure by rational use of physical potentials of the Study Area. In order to realize the said measure related with poverty reduction through intensification of productive activity of small and marginal cattle farmers representing the majority of the destitute strata of the rural area, the development proposal shall be forged in compliance of the following development concepts. In due consideration of the fact that target farmers have limited land area and suffer from unfavorable soil conditions, drastic development attributable to considerable amount of investment cost would not be viable. In this connection, more feasible plans to be accepted by farmers without difficulty shall be proposed.

1. To make effective use of physical potentials of the region

In relation with the factors of problems, which have been compiled in the course of the problems analysis on potentials and constraints on development, proposal for mitigating these problems shall be prepared taking potentials of the region into consideration.

2. Eligibility of beneficiaries

Under a variety of natural and social environment, agricultural and livestock production in the area may be classified into two categories: subsistence-oriented farming and cash crops production; the former is represented by farmers who depend on overseas remittance by migrant workers for a major portion of their household income and whose labor force for farming activity is represented by women, meanwhile the latter is conducted by family members of farmers. In the light of this situation, it is essential to define clearly eligible beneficiaries in proceeding agricultural and livestock development projects, focal ones for regional development.

3. Initiative of Beneficiaries and Support of the Public Sector

The public sector, which has been playing a co-partner on the focal role in the development of projects, is likely to diminish its involvement in development efforts due to austerity policy of the central government. In this connection, the focal role shall be transferred to beneficiaries, which shall be followed by reconstruction of development system with the initiative for development taken by beneficiaries and by strengthening of supporting system of the public

sector.

4. Sustainable development led by beneficiaries

For promoting sustainable development, it is indispensable that beneficiaries of development should be well aware of the constraints prevailing in the region and to propose by themselves measures to relax the said constraints. In this connection, so as to enable sustainable development in a fruitful manner, it is advisable to make better utilization of existing organizations and to structure an unconventional system leading to re-structuring of existing organizations, if necessary and to foster active participation of local people in the development process.

5. Development depending on available financial resources within the region

The Study Area is featured by predominance of migrant workers living both within Ecuador and abroad and a considerable amount of remittance made by these migrant workers inflows into the region, without being invested on productive activities. Effective use of the said fund may form a capital for revitalization of industrial sector of the region, subject to arrangement of appropriate finance-related system for this purpose.

6. Development with attention paid to human security

From the viewpoint of human security, it is proposed to forge development projects aiming at capacity building and empowerment of personnel in charge of implementation of project, supporting socially handicapped persons and responding awareness of project beneficiaries.

4.3.2 Basic Development Concepts and Proposed Projects

The goals of the present Master Plan fall on intensification of productive activities and poverty reduction and so as to ease prevailing constraints leading to forging basic development concepts, the following development components have been extracted.

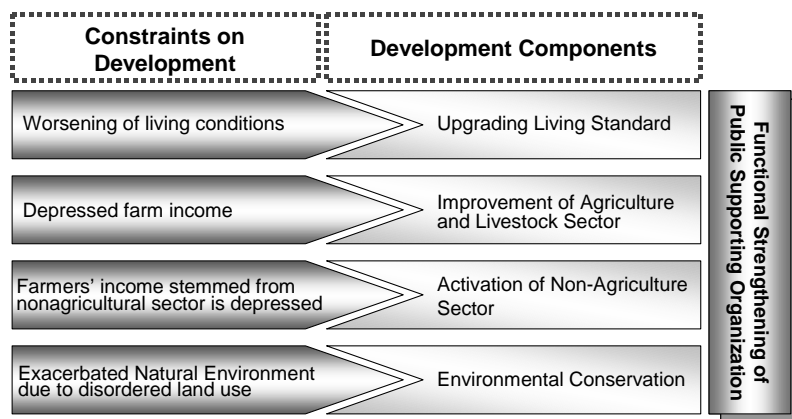


Figure: Constraints on Development and Basic Development Concepts

In addition to the four development components, namely: “Upgrading of living standard”, “Improvement of agriculture and livestock sector”, “Activation of non-agricultural sector” and “Environmental conservation”, it is indispensable to comprise “Functional strengthening of public supporting organization” in order to put the said four components into implementation.

“Environmental conservation” is considered as a guarantee leading to sustainable development, meanwhile the remaining development components: “Upgrading of living standard”, “Improvement of agriculture and livestock sector” and “Activation of non-

agriculture sector” envisages measures directly contributing to poverty reduction and intensification of productive activities. In sum, comprehensive ascent of the regional economy through intensification of productive activities is closely related with poverty reduction.

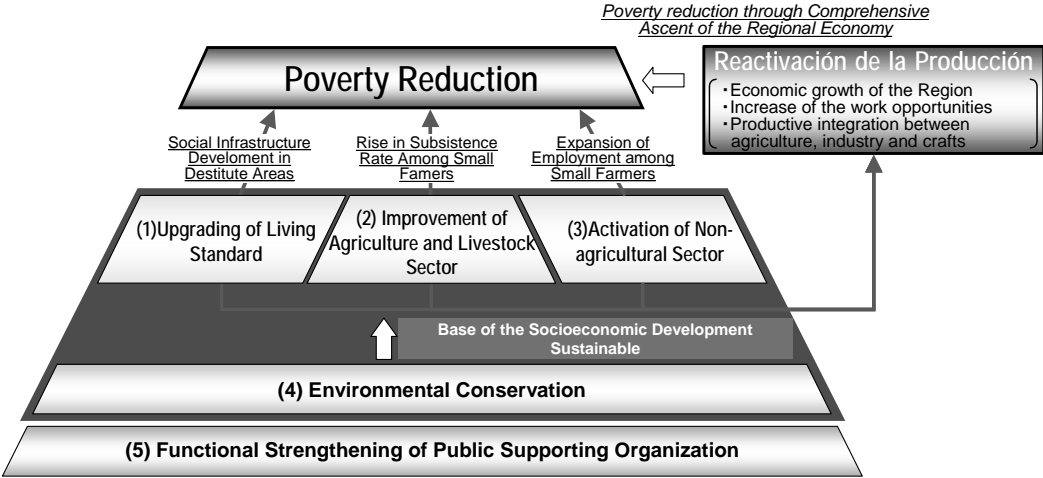


Figure: 5 Functional Strengthening of Public Supporting Organization

In due consideration of potentials and constraints on development as well as on the basis of the conditions for formulation of the basic development concepts, the basic developments shall be forged with regard to each one of the five components. Furthermore, development projects as substantial measures for the said components shall be designed.

(1) Component for Upgrading Living Standard (Social and Economic Infrastructure Development)

Basic Development Concept:
 Development of rural social and economic infrastructure with participatory approach of beneficiaries and with rational use of limited fund.

Development of social infrastructure in urban area located within the cities of Cuenca and Azogues has reached a satisfactory level, meanwhile that in rural area still remains at depressed level. In this connection, development of social infrastructure shall be proceeded with emphasis laid on rural areas. In implementation of social infrastructure with limited budgetary allocation in rural area where the cost-benefit ratio relevant to infrastructure development project is declined (fewer beneficiaries), it is of importance to save investment cost by fostering an involvement of the beneficiaries in substantial portion of development efforts and entrusting operation and maintenance task of completed facilities to them. In so far as development of irrigation system is concerned, participatory approach of the beneficiaries has been already employed, although implementation of related projects entails limited budgetary allocation and calls for efficiency in implementation. In sum, the basic development concept for social and economic infrastructure development shall be: “Promotion for rural social and economic infrastructure development with employment of participatory approach of beneficiaries and with rational use of limited fund”

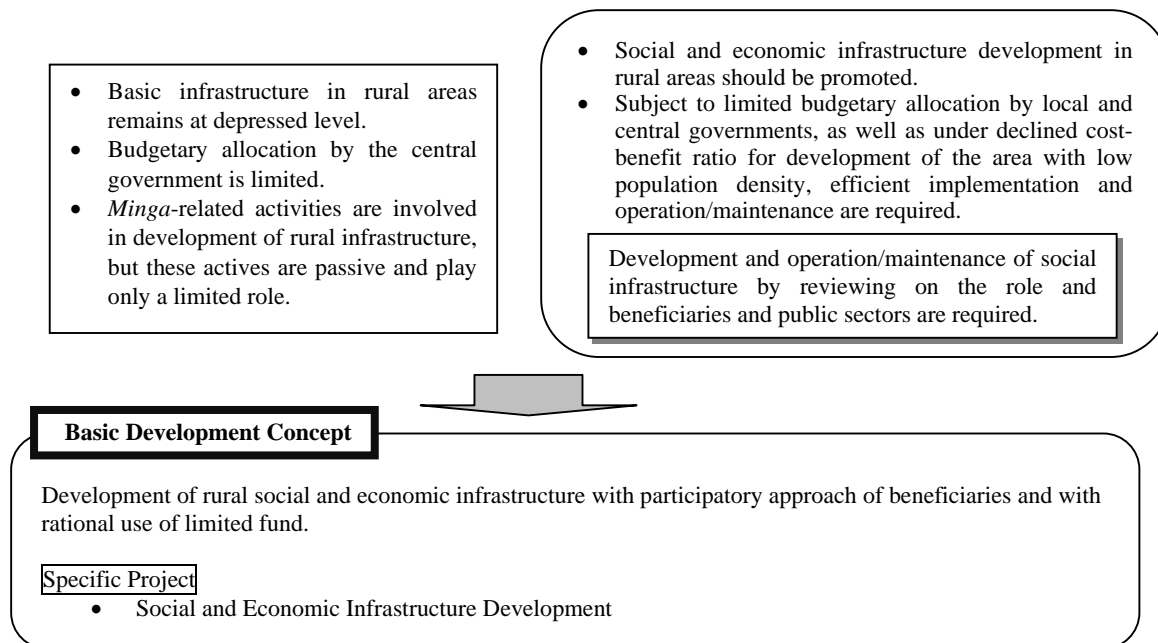


Figure: Basic Development Concept for the Component for Upgrading of Living Standard

Specific Project: Social and Economic Infrastructure Development

With regard to social infrastructure development within the Study Area, it is required to employ more efficient development methodology, entrusting *Minga*-related activities a more substantial role than before. At present, simple civil works included in social and economic infrastructure development projects are carried out under a participatory approach of beneficiaries, but the attitude of the beneficiaries in participation of development projects is passive, only to respond when they are demanded by public implementation agencies. Under these circumstances, it is advisable to design a mechanism in which beneficiaries are expected to play a central role in development projects by fostering their willingness and spontaneity in development effort. In concrete, infrastructure development projects shall be implemented putting the beneficiaries to the focal position from implementation to operation and maintenance. For this purpose, it is essential to receive technical assistance at each stage of project implementation and, at the same time, to specify the role of beneficiaries in the development of the project.

Such tasks as design, surveying and construction works with use of construction machinery which are beyond the beneficiaries, should be undertaken by the public agencies which have engineers specialized in roads, waterworks, irrigation, etc. on their staff as well as construction machinery. In so far as waterworks-related projects are concerned, a grant aid project of JICA for supply of construction machinery is underway at present in the Province of Azuay and construction machinery are already introduced for development of trunk roads network (those connecting cantons and superior level). For implementation of projects composed of water supply system, branch roads network (those connecting parroquias and inferior level) and irrigation system in the Province of Cañar, public supports are indispensable; regarding branch roads network, municipal offices shall be the implementation agency, but, without having qualified engineers nor construction machinery, construction works shall be entrusted on a contract basis to CREA or other experienced public agencies; irrigation system development projects have been carried out by CREA, which shall continue to take charge of this task subject to renovation and replacement of obsolete construction machinery.

(2) Component for Improvement of Agricultural Activities

The agricultural sector in the Study Area has a serious problem from the viewpoint of productive base due to the fact that a number of farmers carry out crop farming at steep and extremely limited lands.

By contrast, the region enjoys production of cash crops (fruits, vegetables and flowers) without difficulty under cool climate condition, peculiar characteristics of the Andean Region; such advantageous condition is not identified in surrounding regions. However, not all lands in the region can enjoy this merit because natural conditions of the region represented by climate and soil are diversified. Crop production areas thereby are divided into two categories according to profitability of crop production.

Basic grains represented by corn are produced at low profitable areas where severe natural condition is predominant and farmers in these areas are not in a position to sustain their household depending on nothing but crop production, resulting in emigration of adults outside the region in search of other sources of income. Farming in these areas are conducted by the remaining family members, mainly consists of women and elderly and farm productivity depending on these labor force is depressed accordingly. In these areas, the greater portion of income sent by migrant workers is not spent on farm investment but on sustaining household, making it difficult to attain self-sufficiency for even basic grains. It is further observed that some farmers shift farming practice from crop production to cattle farming because of limited availability of labor force, but their cattle farming remains in small scale with a holding of not more than 2 - 3 heads. Therefore, these areas are considered as poverty-predominant areas within the Study Area.

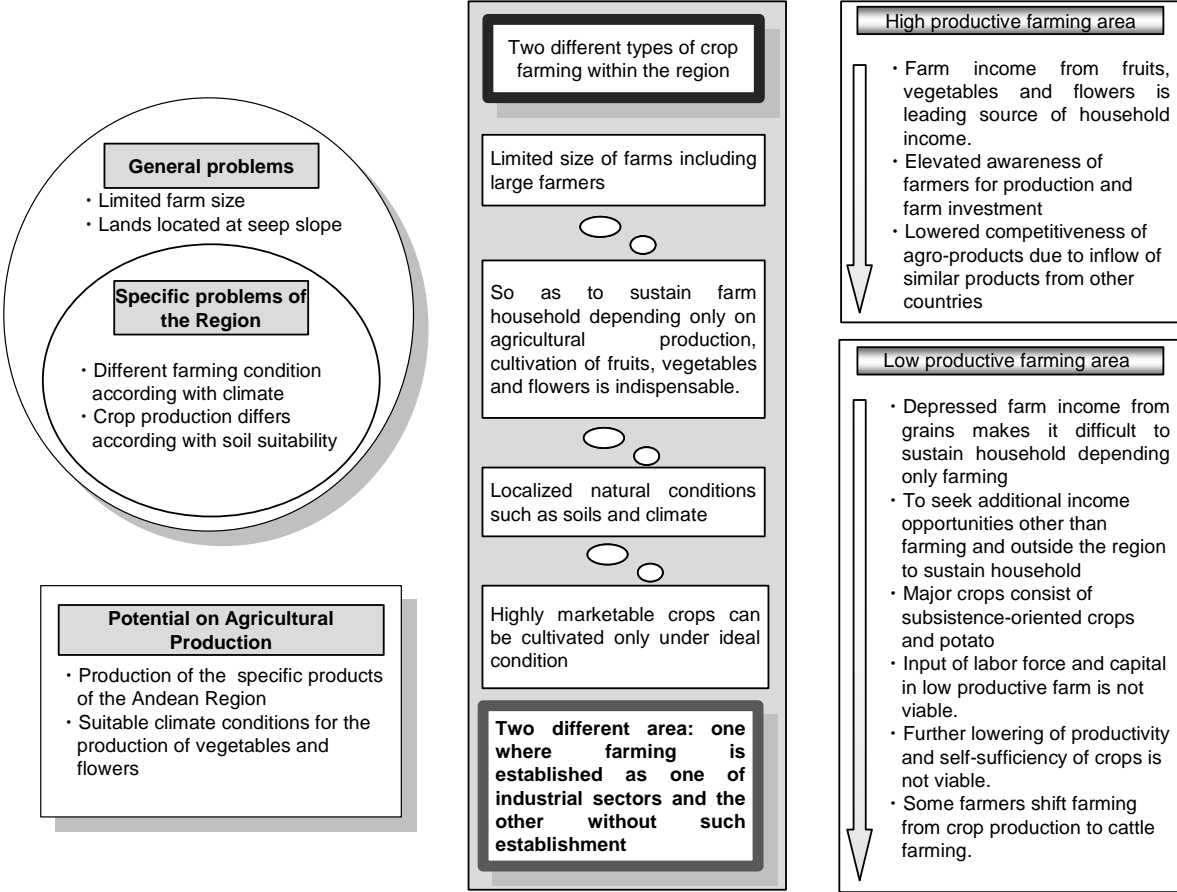


Figure: Characteristics of Agriculture in the Region

Meanwhile, the areas enjoying higher profitable farming, farmers can sustain their household with farm income only; emigration of farm family members as migrant workers is not as common in these areas and farmer' awareness for productive activity and for farm investment is evaluated to be high.

The problem in these areas is declined competitiveness of their products caused by inflow of similar products from neighboring countries at a lower price.

As cited above, the Study Area is composed of two areas with clearly distinct farming patterns. Proposed development concepts thereby should be formulated according to specific conditions of each areas; relevant basic development concepts on improvement of agricultural and livestock sector shall consist of strengthening of institutional supporting services targeting two different types of farming: one is low productive farming (small and marginal farmers) and the other is high productive farming.

a. Basic development concepts on low productive farming

Basic development concepts:
Expansion of production for subsistence-oriented agro-products

Cultivation of subsistence-oriented crops, raising of cattle and production of milk are prevalent at present in destitute region, but the output of crops and processed products of livestock (meat, milk and cheese) do not satisfy subsistence farmers’ family. Faced with such situation, an encouragement of crops oriented to satisfy the needs of farmers’ family itself shall be the basic development concept in low-productive farming areas. On the other hand, so as to diversify crops farming pattern by introducing cash crops other than potato, it is prerequisite to employ advanced farming technologies and marketing strategies as well as to arrange productive infrastructure represented by irrigation system; it is less viable to realize this attempt due to constraints relevant to natural and socio-economic conditions, if considerable supports from the public sector should not be rendered. Taking these circumstances into consideration, an increase in output of subsistence-oriented crops shall constitute the basic development concept in poverty-predominant areas.

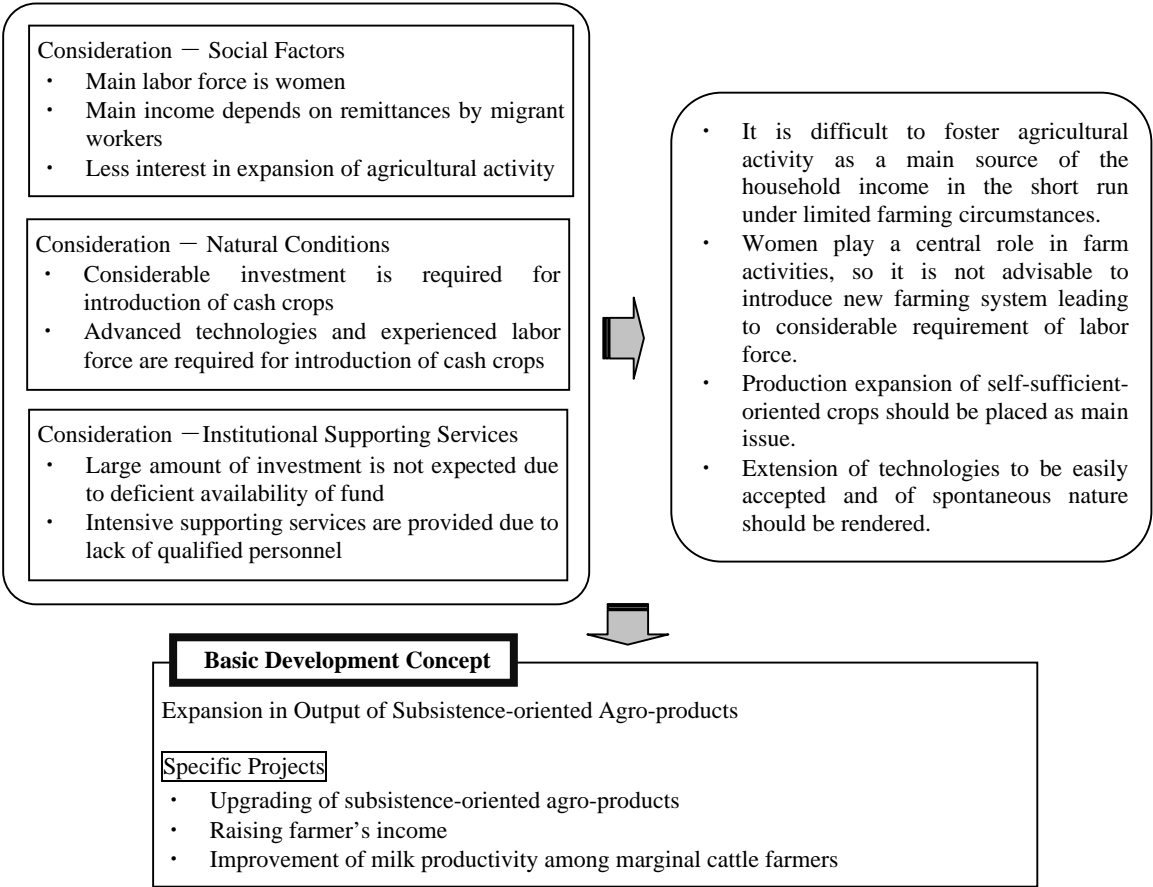


Figure: Basic Development Concept for the Component for Improvement of Agriculture and Livestock Sector (Low productive farming area)

Specific Project: Upgrading of subsistence-oriented agro-products

The greater portion of farmers in the region is not in a position to attain crop production sufficient enough to satisfy the demand of foodstuff for their family members. Among these farmers, because most of the male adults have left the region seeking for employment opportunity outside the region, women play a central role in farming activities, although available time to spend on farming is limited because of having a variety of tasks to do other than farm labor. Under the circumstances, proposal for improvement of agricultural activity among small and marginal farmers shall be raising the productivity of actual farming practice, i.e., subsistence farming, in due consideration of prevailing socio-economic condition of these farmers. Even though under limited resources, it is possible that small and marginal farmers should employ non-conventional farming technologies through introduction of hybrid varieties of crops (like potato), which, in turn, shall contribute directly to rise in farm income. Therefore, this attempt shall be included in this project. On the other hand, taking account of limited budgetary allocation of the public supporting agencies for infrastructure development, priority in implementation of development project shall be given to such projects as to be implemented at lower cost and their effect disseminated to a broader range of beneficiaries. An improvement of agricultural production shall be attained through implementation of the Project: “Upgrading of subsistence-oriented agro-products”.

Specific Project: Raising farmer's income

In addition to social characteristics such as predominance of traditional extensive farming and accelerated depopulation due to emigration of adults seeking for employment opportunity outside the region, which are similar to an increase in output of subsistence-oriented agro-products, combined farming consists of raising of small animals (Raising *cuys*) and production of Andean fruits (Tree tomato) is conducted for subsistence of farmers' household and for sale of surplus products. Under the circumstances, an increase in output of subsistence-oriented agro-products together with improvement in raising of small animals with introduction of improved species and upgrading in production of Andean fruits shall be included in the present project; in particular, raising of small animals can be expected to gain higher profit at lower costs and, in addition, an expansion of relevant technology and extension of improved species shall be attained. Renovation of actual farming pattern together with elevated farm income among small and marginal farmers shall be realized through implementation of the Project: “Raising farmer's income”.

Specific Project: Improvement of milk productivity among marginal cattle farmers

Marginal livestock farmers within the Study Area hold 3 heads of dairy cattle on average. Income from such dairy cattle farming does not account for major portion of their household income but constitutes one of the important sources of income, which can be available in a shorter period without requiring prolonged time for farm labor. Among these farmers, because male adults of the family members are absent for working outside the region, women play the central role in farm labor; having to engage in a variety of activities other than farming, these women's working hours to be spent on farming is limited. In view of these social factors, the proposal for improvement of farm activities among these farmers is suggested to orient to an increase in milk production to be attained thanks to introduction of improved varieties of pasture, renovation of feeding system, strengthening in sanitary control of animals, etc. Making reference to available fund of the public supporting agencies and other factors, upgrading of farming and living conditions of marginal livestock farmers shall be achieved through implementation of the Project: “Improvement of milk productivity among marginal livestock farmers”.

Arrangement of Financing System for Implementation of Projects:

In implementing the projects targeting small and marginal farmers mentioned above, farmers are required to prepare necessary funds for procurement of hybrid seeds, fertilizers, agricultural chemicals, small animals, etc. Nevertheless, it is supposed that most of the target farmers should not be in a position to prepare such funds and financial assistance from the public sector is thereby anticipated. It is worthwhile to indicate that BNF and commercial banks have no credit line for this type of project, apart from their interest rate for loan service being too elevated for small and marginal farmers to make use of. In this regard, the projects for improvement of agricultural livestock sector shall comprise components relevant to financing to projects' beneficiaries. It remains undecided in this moment whether reimbursement of credit should be made in cash or in goods such as seeds and fertilizers; this issue should be discussed and decided according with the scope of each project as well as taking account of economic capability of the proposed beneficiaries.

b. Basic development concept on high productive farming

Basic Development Concept:

Strengthening of agricultural and livestock activities as the core industry of regional economy

With the exception of the urban area of the cities of Cuenca and Azoguez, agriculture is a mainstay within economic activities of each area. In the area extending over the basin of the Paute River, high productive farming is realized with cultivation of flowers, fruits and vegetables; tree tomato and babaco as representative products in these areas have been cultivated attaining high productivity matching specific physical conditions of the area and have been highly appreciated at the markets. However, competitiveness of the said products at the markets is likely to decline as a consequence of invasion of similar products from neighboring countries in these days. On the other hand, livestock activity is represented by dairy production, which prevails in and around the outskirts of the urban area, enjoying a better access to trunk roads.

Under the circumstances, upgrading of quality and lowering of production cost for cash crops, in particular fruits and flowers, as well as improved quality and consistent production of dairy producers are a pressing issue to be tackled with; for this purpose, re-organization of farmers' association, improvement of marketing condition and provision of financial and technical assistance by the public sector are required.

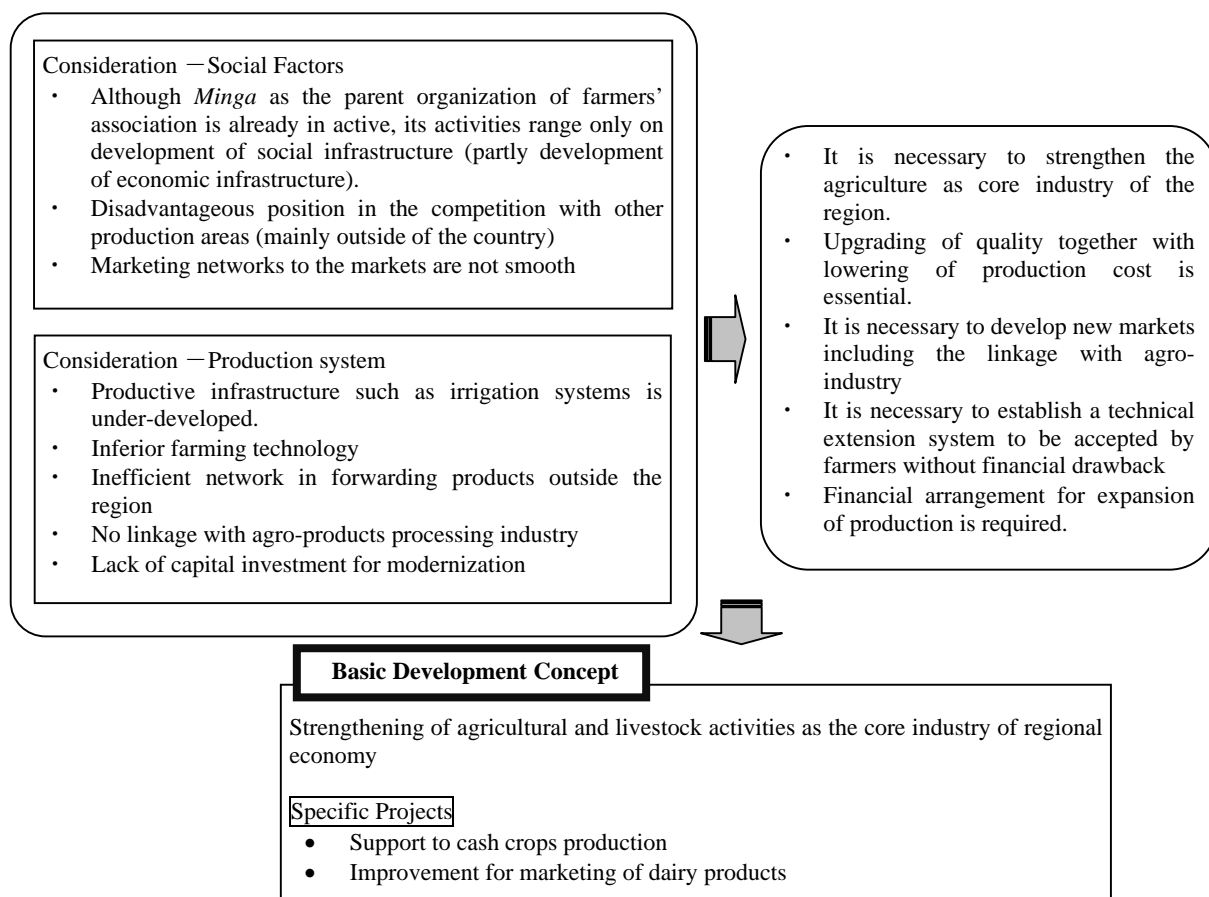


Figure: Basic Development Concept for Component for Improvement of Agriculture and Livestock Sector (High productive farming area)

Specific Project: Support to cash crops production

According with physical potentials, cash crops in the Study Area are represented by Andean fruits, flowers and vegetables. Farmers engaging in production of these agro-products can sustain their households depending only on their farming; and the maintenance of the status quo by these farmers would be made in the future. However, there remains considerable margins for improvement of their farming system, especially in terms of quality of products and unit yield; upgrading of quality in products shall be attained subject to being rendered technical extension services and provision of productive infrastructure (Irrigation system and hothouse). Apart from the said technical issue, prevailing constraints on marketing of products such as absence of marketing destination and declining reputation of products at existing markets should be alleviated. As a countermeasure against the said constraints, it is suggested to strengthen and expand the functions of farmers' association and to improve technical extension services, so that technical advancement from production to marketing should come true. Improvement of cash crops farming thus shall be achieved through the Project: "Supports to cash crops production".

Specific Project: Improvement for marketing of dairy products

Because raw milk produced by small cattle farmers are stored at a normal temperature and are forwarded to processing industries; they are evaluated by retailers as low-priced and inferior quality products. This milk is not qualified to be processed as high value-added products like LL in terms of their quality and thus are traded at depressed prices. It is roughly estimated that the farm-gate price of the raw milk in question should be elevated to the range of 1.5 time or twice as high as the actual level, provided that refrigerated storage should be introduced and adequate quality control of milk should be put into implementation. In sum, an introduction of refrigerated storage will directly contribute to boosting the farm-gate price, so the Project: "Improvement for marketing of dairy product

(Introduction of refrigerated storages to marginal dairy cattle farmers)” shall be implemented. In procurement and operation/maintenance of the said facility, formation of farmers’ association together with institutional supporting services is a prerequisite.

Arrangement of financing system for implementation of the projects

BNF is in charge of provision of agricultural credit services, but its service range is extremely limited due to deficient allocation of funds for agricultural purposes. On the other hand, small and marginal farmers are hardly accessible to the credit lines of commercial banks, because their interest rate is too elevated, followed by strict appraisal procedure. Meanwhile, medium farmers are unable to embark on modernization of their farm activities due to lack of necessary fund, although they are well aware of the importance for this attempt. Under these circumstances, aiming at provision of financial assistance to farmers, “Arrangement of financing system for implementation of the projects” shall be included in the component: Improvement of Agriculture and Livestock Sector of the Master Plan.

(3) Component for Activation of non-agricultural sector

Basic Development Concept:
Introduction of agro-products processing industry in linkage with agricultural and livestock sector

The agriculture and livestock sector in the Study Area produces considerable amount of raw materials represented by Andean fruits and milk to be provided to agro-products processing industry. Up to date, processing industry, however, has been under-developed within the Study Area and agro-industry has scarcely established. In addition, processing of raw milk remains at inferior level, without bestowing high value-added on the products. On the other hand, no active industry other than agriculture is found in the rural area, so creation of new employment opportunities among destitute strata is anticipated with the introduction of a non-conventional industry. Non-standardized products derived from harvests of Andean fruits and other agro-products are required to be utilized effectively because they cannot be forwarded to the market.

Aiming at creation of new employment opportunity and revitalization of non-agricultural sector within the region through processing Andean fruits and raw milk, an introduction of processing industry in close linkage with agricultural and livestock shall be promoted.

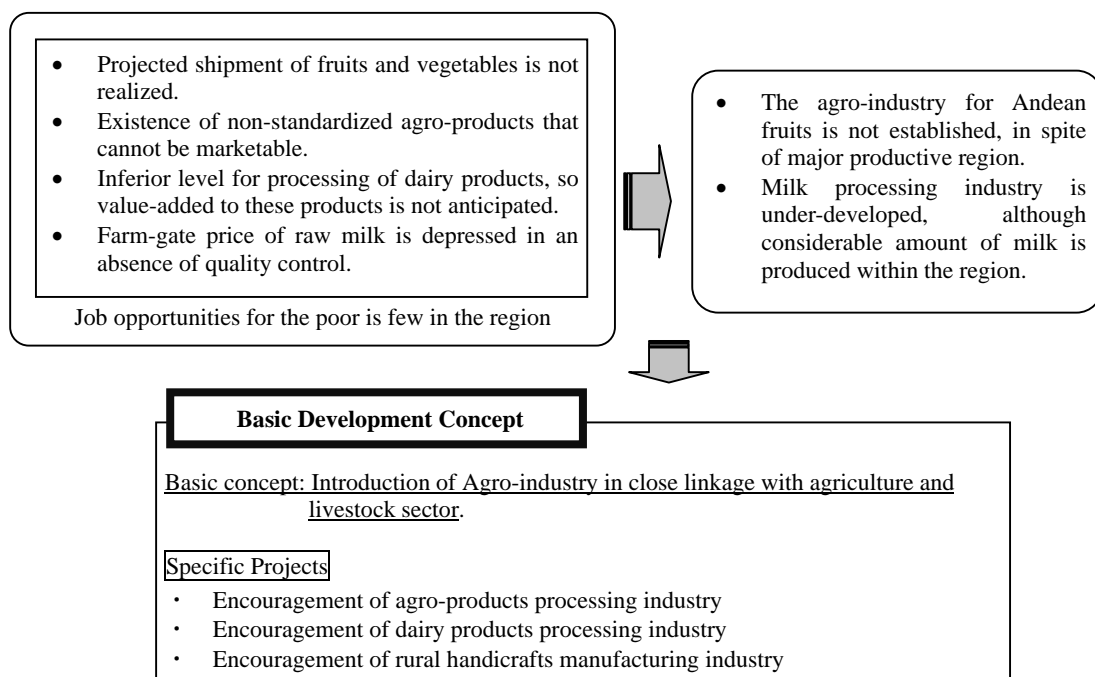


Figure: Basic Development Concept for the Component for Encouragement of Non-agricultural Sector

Specific Project: Encouragement of agro-products processing industry

With the exception of low-productive and traditional handicrafts, the industrial sector has scarcely developed in the rural area of the Study Area, in spite of a variety of specific agro-products being produced in the Andean Region. In this connection, it is highly anticipated that value-added of the agro-products in the region should be boosted by linking the agro-products with the processing industry. Besides, introduction of agro-industry to rural area is of importance in terms of creation of new employment opportunity. Therefore, the Project “Encouragement of agro-products processing industry” is appreciated not only to promote agricultural and livestock sector but also to create new job opportunities in the rural area.

Specific Project: Encouragement of dairy products processing industry

The Study Area is a milk production area, but most of raw milk is processed at small-scaled and old-fashioned industries, depressing value-added of processed products and providing limited opportunities of employment. Under the situation, aiming at elevating value-added of dairy products, the Project: “Encouragement of dairy products processing industry” shall be implemented.

Specific Project: Encouragement of rural handicraft manufacturing industry

Handicrafts manufactured in the Study Area consists of Panama hats as the leading product, craft products, ceramics, folk costume and precious metals and ornaments, which are manufactured at household industries, playing an important role as a source of part-time income for the household. The share of these goods at domestic markets has lowered recently as a consequence of invasion of similar but low-priced products from neighboring countries. Furthermore, the dollarization of the national currency has devaluated their competitiveness at markets and the handicrafts manufacturing industry in the region has been declined nowadays. Contrary to the development of tourism industry, the circumstance around handicrafts industry, one of the tourism-related resources, is under-developed and there remains room for strengthening the industry in such manners as raising production efficiency, intensification of market research to grasp the needs at markets (Design, size, etc.) and concentration in production targeting specialties of the region. An implementation of the Project: “Encouragement of rural handicraft manufacturing industry” is thus proposed so as to upgrade the quality of craft products/handicrafts and to improve production efficiency. It is envisaged that this project would contribute to succession of the regional traditional industry as well as inheritance of the regional culture and customs.

(4) Component for Environmental Conservation

Basic Development Concept:

Implementation of reforestation project by local people in collaboration of public supporting organization by demarcating role of each party.

Provision of environmental education targeting clearly eligible beneficiaries

Deforestation is accelerated within the Study Area due to expansion of farmlands at steep slopes where farming activities face difficulty. It fears that this accelerated deforestation would bring about soil erosion and deterioration in lands capable of cultivation of water resources. In the same area, orchards and reforested lands are located at limited portions and some of these lands have been shifted to farmlands. On the other hand, forest fire take place frequently caused by conventional practices and customs represented by burning off a field; this situation has negative impact on the eco-system of the region vested with a variety of fauna and flora. So as to mitigate this unfavorable incident, various agencies have launched reforestation projects aimed at conservation and recovery of soils and water resources as well as environment protection including enlightening education on maintenance and conservation of environmental resources. The Ministry of Environment is a central government’s organization in charge of formulation of policies, legislation of relevant decrees and implementation of various project and its focal policies have shifted from engineering-oriented projects like reforestation to institution-related projects represented by environmental education. Although the Ministry of Environment envisages carrying out reforestation projects in collaboration with other agencies such as CREA and ETAPA (Responsible agency for management of water resources), but concrete

collaboration system and demarcation of responsibilities between concerned agencies have not been agreed upon yet.

Under the circumstances, promotion of reforestation projects and strengthening of environmental education become a pressing agenda so as to tackle environmental conservation more aggressively. For achievement of the said goals, a linkage among agencies involved in environmental matters and clear demarcation of responsibilities among concerned agencies is prerequisite. Finally, for achievement of integrated environmental conservation throughout the region, reforestation projects at community level and large-scaled reforestation projects with high public interest, both of which are accompanied by environmental education, should be implemented.

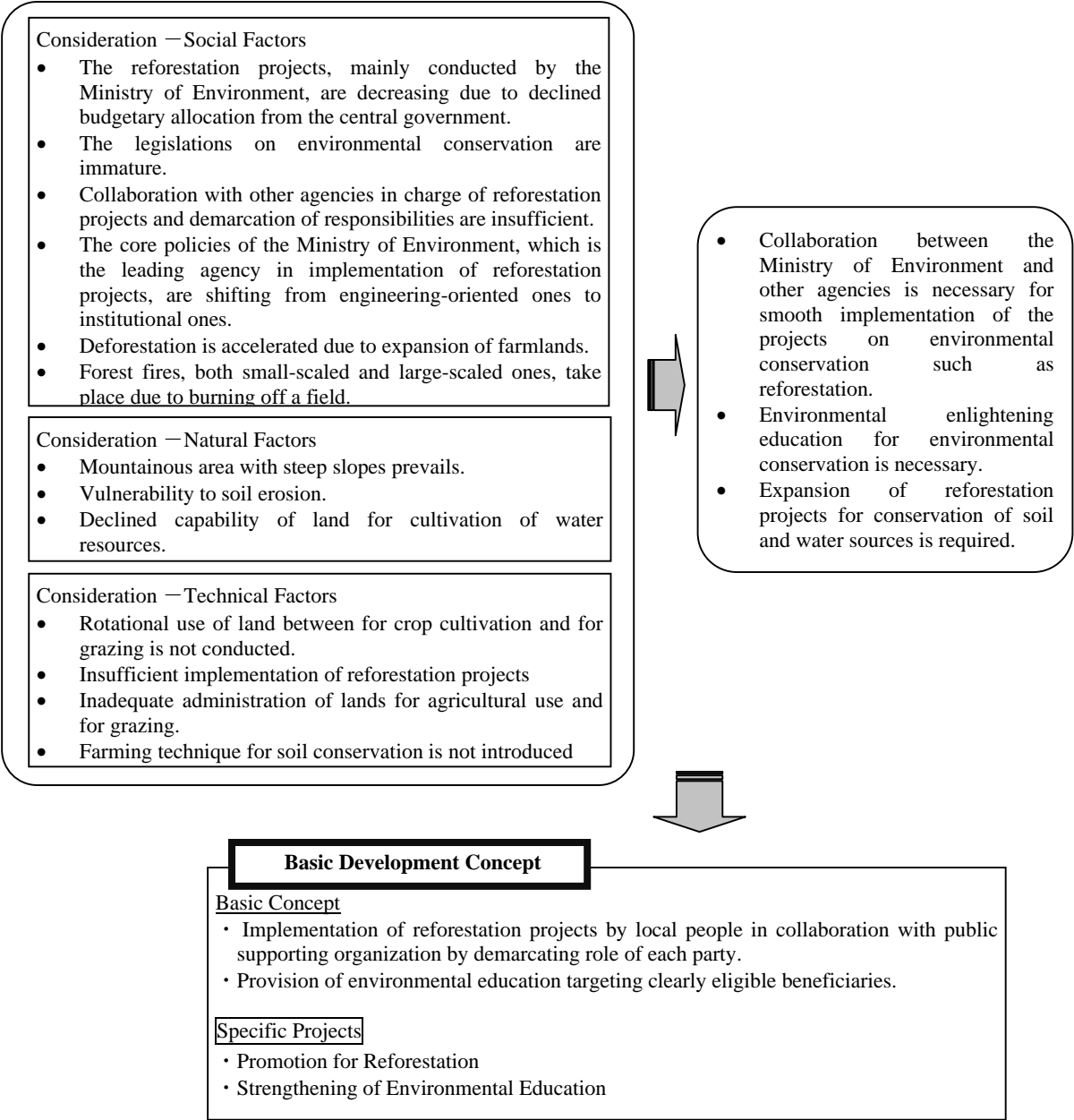


Figure: Basic Development Concept for the Component for Environmental Conservation

Specific Project: Promotion for reforestation

Deforestation is accelerated in the Study Area, as a consequence of excessive grazing and expansion of arable lands. Faced with such situation, various agencies are involved in reforestation projects. In view of the fact that reforestation projects are implemented by the Ministry of Environment in collaboration with other agencies and an emphasis of the policies of the Ministry of Environment in implementation of projects have shifted to institution-related projects like environmental education, it is suggested that the reforestation project within the Study Area should be put into implementation comprehensively by CREA which is equipped with necessary facilities and holds a number of qualified personnel. In implementing reforestation projects, it is prerequisite to specify clearly the responsibilities of the beneficiaries and public supporting agencies, both of which shall be jointly responsible for implementation of the Project: "Promotion for reforestation". Besides, reforestation projects at community level should be hastened so as to accelerate environmental conservation covering the whole region.

Specific Project: Strengthening of environmental education

In Ecuador, the ritual of firing in the forest, which is a superstitious custom praying for rainfall, is still in practice. Public agencies represented by the Ministry of Environment have extended a campaign against this custom at various opportunities, since destruction of natural resources represented by forests is being effected. In the meantime, it is indispensable that people should pay attention to the natural environment and be aware of the importance for protection and conservation of natural resources. In this regard, the Project: "Strengthening of environmental education" shall be implemented, targeting its beneficiaries definitely.

(5) Component: Functional strengthening of public supporting agencies

Basic Development Concept:

Review on actual scope of services of public supporting agencies and functional strengthening with concentration of their resources on focal roles.

Supports to small-scaled industries within the Study Area are rendered by public agencies, universities, NGOs, etc., of which CREA and INIAP play a central role under limited manpower and budgetary allocation; some of the services provided by these two agencies are duplicated and others remain ineffective without having clearly defined purposes. CREA and INIAP are also expected to play as core organizations in implementation of projects/programs included in the present Master Plan. In this connection, review on actual scope of services of these two agencies and functional strengthening with concentration of their resources on focal roles shall be proceeded aiming at their capacity building.

The scope of the supporting services rendered by CREA and INIAP on agriculture, livestock and forestry sectors are as follows. Projects relevant to capacity building of CREA and INIAP shall be implemented respectively.

Table: Summary of Scope of Services Rendered By CREA and INIAP

Sub-sectors	Scope of Supporting Services	Responsible Agency, Remarks
Agriculture	Research/Investigation, Development of Technologies & Technical Extension	INIAP Regarding subsistence-oriented crops, to develop improved varieties suitable to the climatic conditions of the region and highly resistant to disease, to develop useful technologies and to establish and to render technical extension services to be accepted and acquired by farmers Regarding cash crops, to develop high quality and high yielding varieties, to examine suitable area for development of advanced technologies and to establish extension services provision system with charge
Livestock	Research/Investigation, Development of Technologies & Technical Extension	CREA To develop useful technologies for small and marginal cattle farmers and to establish and to render technical extension services to be accepted and acquired by farmers
Forestry	Supply of seedlings	CREA To establish production system of seedlings for useful trees and native trees and to establish extension system of existing technologies
Common	Policies/Programs	CREA & INIAP To strengthen ability of sections in charge of making policies and forging programs.

Specific Project: Functional strengthening of CREA

CREA's services relevant to agriculture, livestock and forestry cover comprehensive activities of agriculture and livestock and reforestation. For involvement in this Master Plan, emphasis in intensification of services shall be laid on technical assistance to cattle farmers. For supporting marginal cattle farmers, introduction of improved pasture and intensification of technical extension services are essential; for this purpose, functional strengthening and intensification of technical extension services at livestock experimental stations at Burgay and Irquis shall be conducted. In the meantime, seedlings for reforestation are cultivated at Chuquipata Nursery Station, but production system there seems inefficient without paying attention to the reforestation program to be carried out within the region. Therefore, projected production of seedlings is required in the future.

Specific Project: Functional strengthening of INIAP

The scope of supporting services for subsistence farming and that for highly profitable farming for production of cash crops are clearly different, so discriminated supporting services for respective farming should be established independently. As for subsistence farming, development of relevant technologies in due consideration of prevailing inferior technological level as well as depressed profitability of target farming system together with extension system of these technologies shall be structured; for this purpose, an intensification in research and investigation tasks and training of personnel in charge of extension services at Chuquipata Experimental Station which is mainly responsible for research and development of technologies on basic grains and extension of these technologies shall be implemented. Meanwhile, an intensification of development and extension of technologies on cash crops represented Andean fruits shall be made targeting functional capacity building at Burgay Experimental Station which is mainly responsible for development and extension of technologies on fruits; establishment of self-supporting system (with charge) for provision of extension services together with training of required personnel is also proposed in this project.

(6) Development components and proposed projects

The following table summarizes the projects forged for attainment of the targets for each component and their substantial measures.

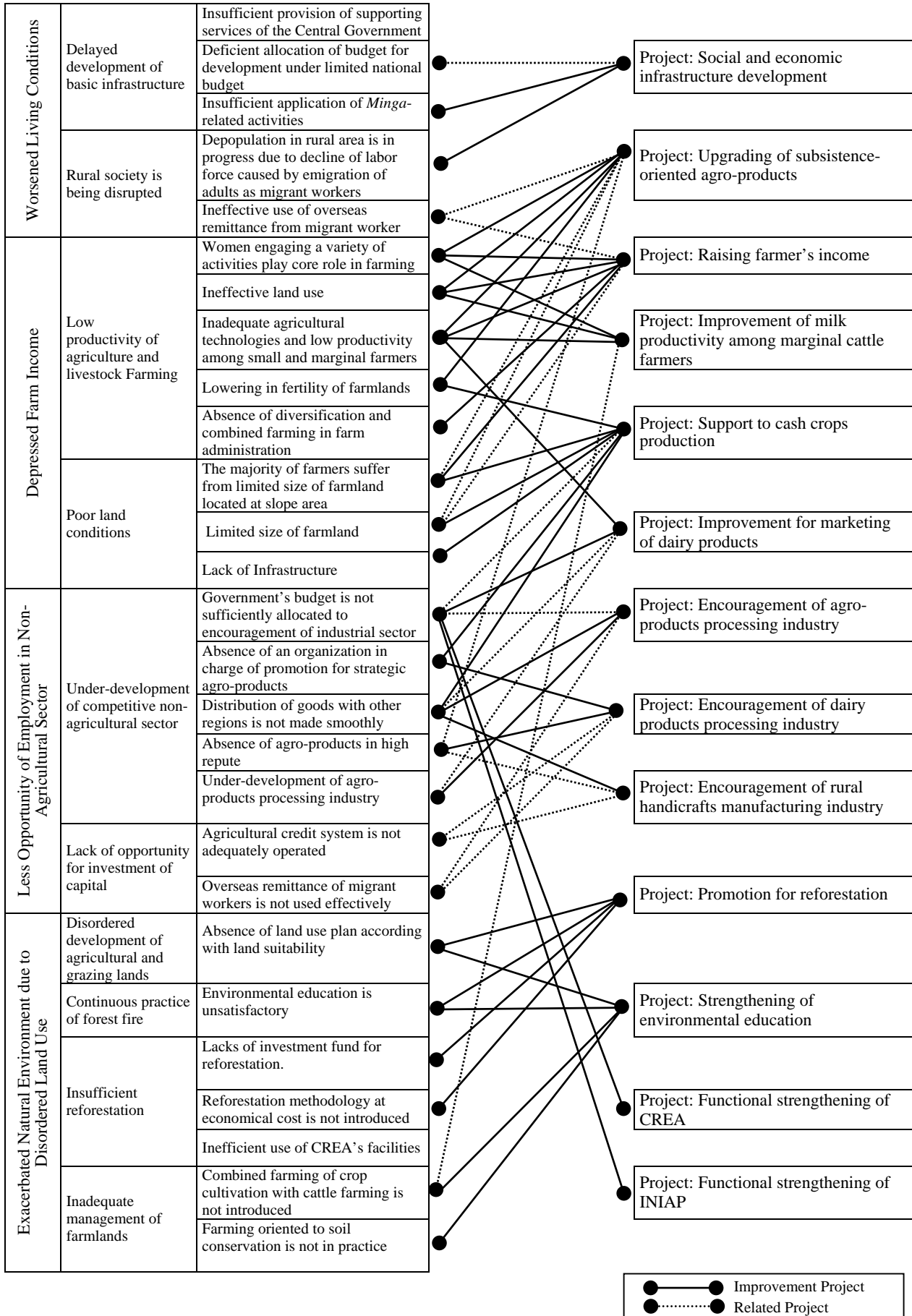
Table: Summary of Projects Forged for Attainment of the Targets for Component and Substantial Measures.

Components	Sectors to be Strengthened		Basic Development Concepts and Proposed Projects
Upgrading of Living Standard	Social and Economic Infrastructure Development		Development of rural social and economic infrastructure with participatory approach of beneficiaries and with rational use of fund <ul style="list-style-type: none"> Project: social and economic infrastructure development
Improvement of Agriculture and Livestock Sector	Strengthening of Low Productive Farming	Agriculture	Encouragement on production of subsistence-oriented agro-products <ul style="list-style-type: none"> Project: Upgrading of subsistence-oriented agro-products Project: Raising farmer's income
		Livestock	Encouragement on production of subsistence-oriented agro-products <ul style="list-style-type: none"> Project: Improvement of milk productivity among marginal cattle farmers
		Financing System	Financial support for implementation of projects
	Strengthening of high Productive Farming	Agriculture	Strengthening of farming activities as the core industry of regional economy <ul style="list-style-type: none"> Project: Support to cash crops production
		Livestock	Strengthening of farming activities as the core industry of regional economy <ul style="list-style-type: none"> Project: Improvement for marketing of dairy products
		Financing System	Financial support for implementation of projects
Activation of Non-agricultural Sector	Agriculture		Introduction of agro-products processing industry in linkage with agricultural and livestock sector <ul style="list-style-type: none"> Project: Encouragement of agro-products processing industry
	Livestock		Introduction of dairy products processing industry in linkage with agricultural and livestock sector <ul style="list-style-type: none"> Project: Encouragement of dairy products processing industry
	Other Sector		<ul style="list-style-type: none"> Project: encouragement of rural handicrafts manufacturing industry
Environmental Conservation	Promotion of Reforestation		Implementation of reforestation projects by the implementation agency in collaboration with beneficiaries and by demarcating clearly responsibilities between concerned bodies <ul style="list-style-type: none"> Project: Promotion for reforestation
	Strengthening of Environmental Education		Provision of environmental education targeting clearly beneficiaries <ul style="list-style-type: none"> Project: Strengthening of environmental education
Functional Strengthening of Public Supporting Agencies			Review on actual scope of services of public supporting agencies and functional strengthening with concentration of their resources on focal roles <ul style="list-style-type: none"> Project: Functional Strengthening of CREA Project: Functional Strengthening of INIAP

4.4 Relationship between Each Project and Prevailing Constraints of the Region

As mentioned above, development projects have been forged in compliance with respective development concept, and implementation of these projects is expected to contribute to easing and overcoming prevailing constraints related with poverty situation and stagnant productive activities. As indicated in the table below, each project is inter-related with a couple of development components and shall have positive impact on solving various problems.

Table: Relationship between Each Project and Prevailing Constraints of the Region



4.5 Strategy for the Implementation of the Master Plan

As the strategy for attainment of upper targets of the Master Plan: “Reactivation of productive activities” and “Poverty reduction”, the development components and concrete projects have been laid down by the previous sub-chapters. The present sub-chapter will examine necessary measures to attain the development components and scenario for implementing the projects, with development agendas acceptable for the beneficiaries and their implementation procedures considering the local resources and farmers’ assets.

4.5.1 Strategy and Scenario for the Master Plan

(1) Strategy for Attainment of Upper Targets

Measures to select necessary projects to attain the development components from the nominated ones in the previous sub-chapter 4.3.2 are to be examined here.

The present Master Plan is defined to owe the direction of the plan to implement the projects based on the farmers’ self-reliance. For attaining the direction, it is indispensable to promote the projects originated with farmers’ ownership and incentives for their own participation based on the awareness to the necessity of “Reactivation of farmers/farmers’ organization”.

The said concrete measures are composed of “Introduction of measures for raising productivity of subsistence-oriented agro-products”, “Introduction of measures for raising farmer’s income”, “Strengthening agro-products to have more competitiveness”, “Introduction of agriculture and livestock activities to be easily engaged by women” and “Introduction of sustainable agricultural and livestock farming”. Those measures shall be the reference of a mutual project selection. The selection and forming of the development components are to be approached based on clarifying the said mutual connection among the measures.

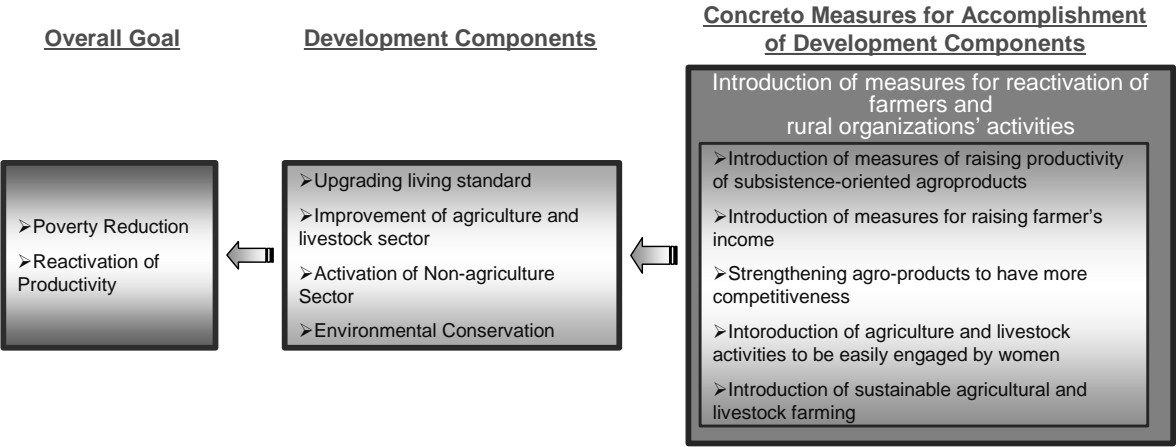


Figure: General Idea of Strategy for Attainment of Upper Targets

(2) Scenario for Reactivation of Productive Activities and Poverty Reduction

For putting the strategy for attainment of upper targets into realization, it is prerequisite to promote sustainable and spontaneous activities of farmers/farmers' organizations, besides financial and technical supports directed to farmers to be rendered by public institutions. In the light of this, the present Master Plan defines clearly "The role to be undertaken by farmers/farmers' organizations" and on the basis of the same "The responsibilities to be taken by public institutions" shall be proposed.

The process for the scenario for "Reactivation of productive activities and poverty reduction" is illustrated as follows:

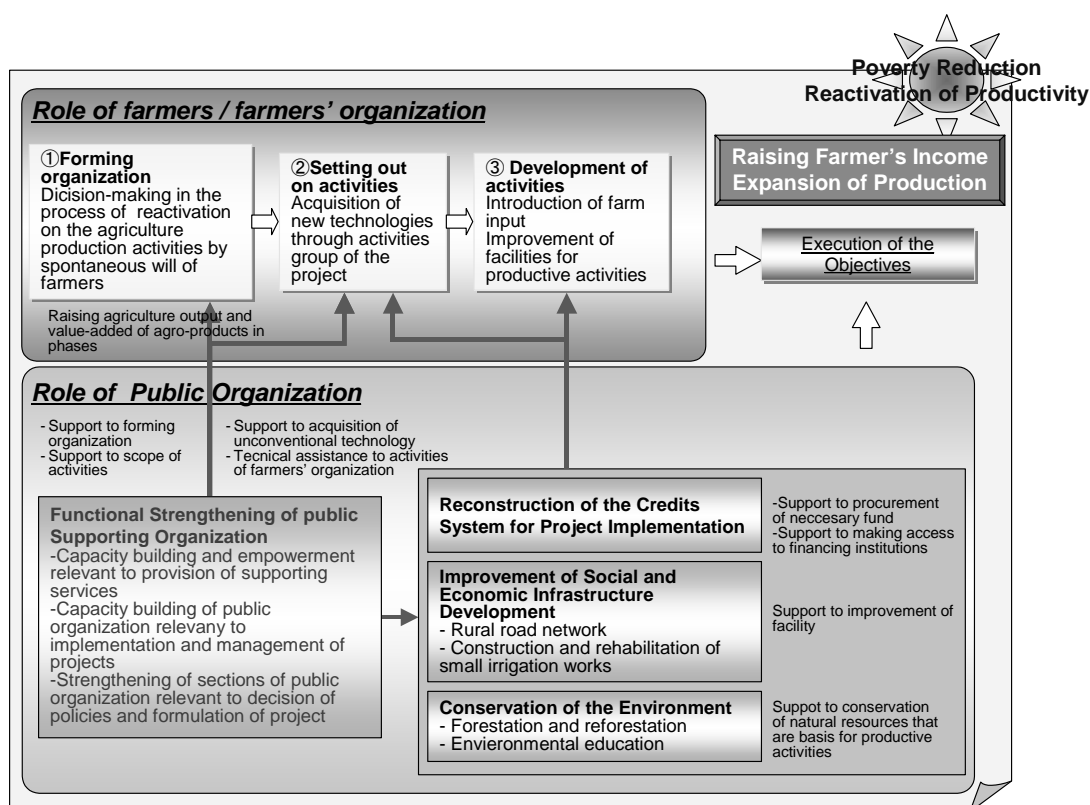


Figure: Scenario for Reactivation of Productive Activity and Poverty Reduction

〈The role of Farmers / Farmers' Organization〉

The roles to be undertaken by farmers/farmers' organizations within the present Master Plan are as summarized below:

- 1) **Forming organization:** Destitute farmers in the Study Area shall be affiliated to farmers' organizations in view of upgrading their living standard and reactivating their farming activities spontaneously.
- 2) **Setting out in activities:** Affiliated farmers in organizations shall set out in joint activities like acquisition of unconventional technologies.
- 3) **Development of activities:** To be developed improvement of productive environment such as renovation and rehabilitation of productive infrastructure to be accorded with acquired technologies.

On the basis of the above-mentioned activities, development components shall be implemented bringing about an expansion of agricultural and livestock production and raising farmer' income; thus,

upper goals shall be attained. In this process, provision of institutional supporting services by public organization to farmers/farmers' organizations at respective phase as well as collaboration of concerned parties are essential.

As cited before, activities of farmers/farmers' organizations shall anticipate institutional supporting services of public organizations; in regard with 1) Forming organization, administrative and managerial supporting services are required and as for 2) Setting out in activities, supporting services in acquisition of unconventional technologies are indispensable. In this connection, the public sector shall undertake "Functional strengthening of institutional supporting services" aiming at empowerment and capacity building of personnel in charge of institutional supporting services. On the other hand, during the phases of 2) Setting out in activities and 3) Development of activities, "Improvement of financing system" is envisaged within context of support to farmers in procurement of necessary fund for farming activities. It is a premises that development of farmlands and social infrastructure that are basis for implementation of concrete measures shall have been completed in proposed areas of the Master Plan and "Social and economic infrastructure development" thereby shall be proceeded. Furthermore, in an attempt of sustainable expansion of productive activity, "Improvement of environmental infrastructure" is an indispensable factor, so that degradation of land resources should be mitigated and water resources should be secured.

〈Role of the Public Organization〉

Role of the Public Organization shall consist of "Functional strengthening of institutional supporting services", "Improvement of financing system", "Social and economic infrastructure development" and "Improvement of environmental infrastructure".

Concrete activities of the public sector falls on "Functional strengthening of institutional supporting services" with the purpose to upgrade the quality of supporting services of public organizations to be rendered to farmers/farmers' organizations and, at the same time, to realize capacity building and empowerment of public organizations relevant to implementation of development projects; besides, upgrading the ability for planning policies and projects/programs of the sections in charge shall also be proposed. In so far as "Improvement of financing system" is concerned, an introduction and operation of micro-credit system, a proposal for supporting farmers in procurement of necessary funds for their farming activities, as well as provision of supporting services to farmers for making access to private financing institutions are envisaged. Meanwhile, regarding "Social and economic infrastructure development", the public sector shall be responsible for lending construction machinery and materials, giving advisory services in planning projects and supply of engineering services, all of which are indispensable component for farmers/farmers' organizations to realize development of rural road network and small-scaled irrigation works. Finally, "Improvement of environmental infrastructure" aims at implementation of reforestation projects and provision of environmental education; reforestation projects in agricultural production areas shall be implemented by local people in collaboration with public organizations (Nursery of seedlings shall be undertaken by public organizations and transplanting shall be carried out by local people) and transplanting in conservation area shall be entrusted to public organizations.

As described above, activities to be owed by farmers/farmers' organization and, in turn, owed by the public organization have to be synchronized with proper timing, indispensable in order to attain the upper goal, as illustrated in the above figure.

4.5.2 Development Agenda and Implementation Procedure

(1) Development Agenda

Socio-Economical and natural conditions of farmers in the Study Area are well diversified, besides the diversification of the agricultural behaviors as their daily nourishment and the levels of living standards. Hence the development agenda to contribute the improvement of farmers' income, within

the agriculture industry has to be considered as indispensable aspect for letting poor farmers attain the upper goal, because the agriculture is their main industry. Besides that, “development agenda depending on public investment” is needed as supports such as public services for the concrete realization of poor farmers’ development agenda.

(Development agenda directly contributing to raising farmer’s income)

1) Consistent production

Targeting small and marginal farmers who are not in a position to have farm production to satisfy their family members, to secure consistent agricultural and livestock production by means of introduction of unconventional farming technologies.

2) Expansion of production

Targeting farmers who have realized consistent agricultural and livestock production, to expand their farm production owing to improvement of farming technologies depending on their own fund or on loan with depressed financing condition, aiming at raising their income.

3) Improvement of collection and forwarding of agro-products

Even though consistent and expansive production should be attained, regional development shall remain limited in an absence of adequate collection and forwarding system including sales network of agro-products. Apart from such situation, arrangement in forwarding amount of agro-products is required for avoiding a sharp drop in price. Under the circumstances, improvement of collection and forwarding of agro-products is a prerequisite for securing adequate sales network.

4) Highly value-added of agro-products

In pursuance of higher grade for reactivation of regional economy, the development component: “Encouragement of non-agricultural sector” comprising development of agro-industry with use of regional agro-products and promotion of handicraft manufacturing shall be put into implementation. It is expected that this attempt shall bring about improving competitiveness of regional agro-products, creation of employment opportunity and raising farmer’s income and shall contribute to regional development.

(Development agenda depending on public investment)

1) Social and economic infrastructure development

In order to tackle with the development agenda contributing directly to raising farmer’s income, social and economic infrastructure is an indispensable factor. The development component: “Social and economic infrastructure development” comprising such components as small-scaled irrigation works, rural roads network, etc that can not be realized depending exclusively on own fund of farmers/farmers’ organizations but entail public investments shall be implemented from the beginning of the Master Plan relying on continuous supports of the public sector.

2) Environmental conservation

The development component: “Environmental conservation”, which is a highly public-oriented comprising reforestation project and provision of environmental education, is currently implemented continuously by the public sector. The present Master Plan shall hasten relevant activity.

3) Functional strengthening of implementation agencies

The above-mentioned agenda shall not be materialized without participation of farmers not supports of public organization. It is thus proposed to strengthen capacity of public organizations with regard to implementation of projects and provision of technical assistance to farmers

(2) Implementation Procedure

The said development agenda is divided broadly into “development agenda directly contributing to raising farmer’s income” which corresponds to the beneficiaries’ capability of “grade of regional reactivation” and “development agenda depending on public investment” which compliments substantially the former agenda. Hereunder the implementation procedure is to be summarized.

Regarding the “Development agenda directly contributing to raising farmer’s income”, “component for improving agriculture and livestock” which consists of “consistent production”, “expansion of production” and “Improvement of collection and forwarding system of agro-products”, as poor farmers are looking for, should have the highest priority. Beneficiaries having accomplished these are going to apply “on-agricultural industry component” which will aim to approach higher value-added products to proceed to upper goals.

“Social and economic infrastructure development”, “Environmental conservation” and “Functional strengthening of public supporting organization” which belong to “development agenda depending on public investment”, shall be a precondition to attain “development agenda directly contributing to raising farmer’s income”. Hence such agenda has to be implemented continuously from the beginning of the Master Plan. Each agendum has mutual relations with other ones. Implementation procedure of each agendum is described as follows.

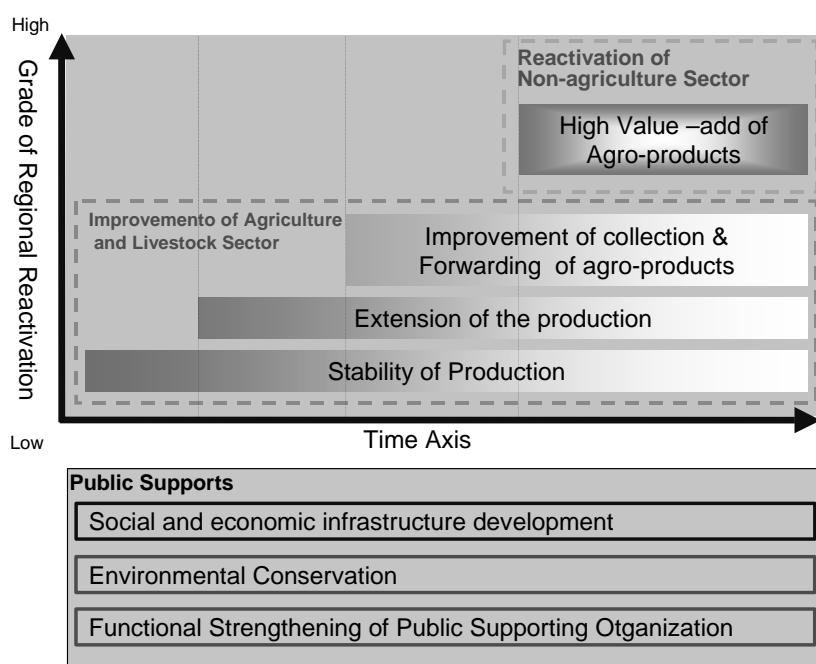


Figure: Development Agenda and Grade of Regional Reactivation

Project implementation schedule and annual disbursement schedule in Chapter 7 of this report are to be defined based on implementation procedure of development agenda examined in the present sub-chapter here.

4.5.3 Specific Project for Attainment of Upper Targets of the Master Plan

The table below summarizes development agenda to have been forged for attainment of upper targets of the Master Plan together with development components and specific projects, which have been proposed in line with the said development agenda.

Development Agenda	Development Components	Specific Project
Consistent production Expansion of production Improvement of collection and forwarding system of agro-products	Improvement of agriculture and livestock sector	- Upgrading of subsistence-oriented agro-products - Raising farmer's income - Improvement of milk productivity among marginal farmers - Support to cash crops production - Improvement for marketing of dairy products
Higher value-added of agro-products	Activation of non-agricultural sector	- Encouragement of agro-products processing industry - Encouragement of dairy products processing industry - Encouragement of rural handicraft manufacturing industry
Social and economic infrastructure development	Upgrading of living standard	- Social and economic infrastructure development
Environmental conservation	Environmental conservation	- Promotion for reforestation - Strengthening of environmental education
Functional strengthening of public supporting organization	Capacity building of public supporting organization	- Functional strengthening of CREA - Functional strengthening of INIAP

4.5.4 Main Issues in Implementation of Projects

In implementation of projects aiming at poverty reduction through intensification of productive activities in Southern Sierra Region, the following issues shall be taken into consideration.

(1) Implementation of Sustainable and Efficient Projects

[Sustainability of Projects]

Apart from expecting higher cost-benefit ratio, which is a focal factor in evaluating the efficiency of a project, sustainability of a project itself is of importance, in view of financial austerity of the Government of Ecuador. In the light of this, it is required to design a mechanism seeking for reduction of the project inputs (capital and materials/machinery, etc.) as far as possible; following this policy, in the projects benefiting directly farmers, such inputs as fund, seeds, fertilizers shall be procured on loan and shall be repaid obligatorily and thus repaid capital, in turn, shall be earmarked for investment of the next candidate area.

[Efficiency of Projects (Technical aspect)]

Each project shall not be implemented by solo agency such as CREA or INIAP but by a couple of agencies. Although various agencies have carried out activities relevant to poverty reduction within the Study Area, these efforts, in principal, have been made independently without any coordination or inter-relation among them. By contrast, because the development projects aiming at poverty reduction included in the present Master Plan comprises a variety of supporting services to be rendered by public agencies, they should be implemented in close linkage among concerned agencies and with an employment of multilateral approach.

[Efficiency of Projects (Financial aspect)]

In so far as the projects which target directly farmers or farmers' association are concerned, part of their investment cost shall be charged to these beneficiaries, from the viewpoints of sustainability of projects as well as of raising awareness of beneficiaries for playing central role

of the projects, and all the projects thereby should be implemented with procurement of investment cost on loan. In this connection, “Arrangement of financing system to support small and medium farmers from financial side” is considered as basic and indispensable project for implementation of development projects. Nevertheless, due to the fact that many projects included in the Master Plan shall be designed aiming at contributing to poverty reduction in considerable manner, the scope of projects should be divided rationally into the proportion on loan (loan conditions such as interest rate, etc.) and that on grant aid.

(2) Implementation of Projects with Participatory Approach of Beneficiaries

In order to attain autonomous development of projects, the participation of beneficiaries in the process of operation and maintenance of projects is critical, apart from supporting services of the public sector. In employment of participatory approach of beneficiaries in implementation of projects, the following factors should be taken into consideration.

- Establishment of a sense of purpose by beneficiaries
- Establishment of mutually supporting spirit among beneficiaries
- Independence from reliance on supports from the nation
- Strengthening industrial competitiveness
- Establishment of the mechanism to disseminate mutually technologies and know-how among beneficiaries
- Effective utilization of existing organizations
- Empowerment for the leaders of beneficiaries

(3) Implementation of Environmental Conservation Projects with Reforestation as Core Component

Countermeasures against soil erosion in the Study Area consist of the reforestation for productive activities at depopulated areas like mountainous zone and the reforestation for conservation of land resources; the former shall be undertaken by the government of Ecuador as a central implementation body, meanwhile the latter shall be implemented by farmers who shall play the focal role. It should be noted that implementation of the reforestation project solely is not economically feasible because proposed benefits stemmed from this attempt do not profit raising income of farmers in a short run. It is thus suggested to put a small-scaled reforestation project into implementation jointly with other projects aiming to increase in output of agricultural and livestock production.

4.5.5 Classification of Projects

(1) Classification of Projects according to Purpose

An attempt leading to poverty reduction in the Study Area is suggested to employ participatory approach of beneficiaries so as to have elevated effects, raised sustainability and reduced investment cost of projects. A total of thirteen (13) projects to be formulated in compliance with basic development concepts may be classified into four categories: (1) Those which contribute directly to raising farmer’s income, (2) Those which are to be implemented under public investment program, (3) Those which relate with sustainable improvement of environment and (4) Those which aim at functional strengthening of public supporting organization.

Table: Classification of Projects according to Purpose

Categories	Development Components	Projects
(1) Projects directly contribute to raising farmer's income	Improvement of agriculture and livestock sector	<ul style="list-style-type: none"> - Upgrading of subsistence-oriented agro-products - Raising farmer's income - Improvement of milk productivity among marginal farmers - Support to cash crops production - Improvement for marketing of dairy products
	Activation of non-agricultural sector	<ul style="list-style-type: none"> - Encouragement of agro-products processing industry - Encouragement of dairy products processing industry - Encouragement of rural handicraft manufacturing industry
(2) Projects aim at Functional strengthening of public supporting agencies	Upgrading of living standard	<ul style="list-style-type: none"> - Social and economic infrastructure development
(3) Projects to be implemented under public investment program	Environmental conservation	<ul style="list-style-type: none"> - Promotion for reforestation - Strengthening of environmental education
(4) Projects relate with sustainable improvement of environment	Capacity building of public supporting organization	<ul style="list-style-type: none"> - Functional strengthening of CREA - Functional strengthening of INIAP

(2) Classification of Project by Source of Fund

For implementation of projects, financing of necessary fund is a precondition for both public supporting organization and farmers. In particular, destitute farmers faces difficulty to access private financing institutions by themselves, therefore an introduction of financing system is envisaged as a component of projects. The said financing system to be introduced consists of micro-credit, financing to entrepreneurs and public investment and shall be categorized by project.

a. Micro-credit

With regard to the projects included in the components: "Improvement of Agriculture and Livestock Sector" and "Encouragement of Non-agricultural Sector", tangible benefits stemmed from these projected are directly distributed to beneficiaries, so these beneficiaries are required to bear the project cost. In the light of this, public supporting organizations shall undertake to create unconventional financing system to enable farmers to procure necessary funds in embarking farming activities proposed in the said projects. The projects related with the component: "Improvement of Agriculture and Livestock Sector", which have a purpose to alleviate poverty, aim at consistent output of subsistence-oriented crops and raising farm income among small and marginal farmers attributable to improvement of productivity and expansion of agricultural and livestock production. The investment required for these projects is relatively depressed with economical seeds and agricultural inputs and satisfactory benefits corresponding to such investment shall be anticipated. For this kind of enterprise that entails relatively depressed investment cost and has a wide range of beneficiaries, micro-credit system shall be introduced.

b. Financing to entrepreneurs

The component: "Encouragement of non-agricultural sector" seeks to attain higher value-added of local agro-products and comprises introduction of processing facilities and equipment to increase profitability. The investment cost for the projects included in this component is relatively elevated, but higher benefit is also expected. The necessary funds for this enterprise shall be procured by participatory entrepreneurs through private financing institutions.

Financing for the above-mentioned enterprise shall be made under solo responsibility of farmers/farmers' organization, so the public sector shall not intervene in this process.

c. Public investment

Public investment shall be allocated to the projects included in the component: “Upgrading of Living Standard” represented by development of such economic infrastructure as irrigation works and social infrastructure as water supply system, in the component: “Environmental Conservation” represented by conservation of water and land resources, and in the component: “Functional Strengthening of Public Supporting Organization” represented by functional strengthening of public agencies responsible for projects implementation.

Even though above-mentioned proposal, there remain some exceptional projects; the project: “Improvement for marketing of dairy products” included in the component: “Improvement of Agriculture and Livestock Sector” that is considered to be highly profitable, shall rely on financing to entrepreneurs and the project: “Encouragement of rural handicraft manufacturing industry” included in the component: “Encouragement of Non-agricultural Sector” that is represented by small-scaled enterprises to be undertaken by individual farmers shall be implemented with the use of micro-credit.

Meanwhile, as for the project: “Support to cash crops production” included in the component: ”Improvement of Agriculture and Livestock Sector”, micro-credit shall be applied to small-scaled enterprises, meanwhile financing to entrepreneurs is proposed for intensive enterprises.

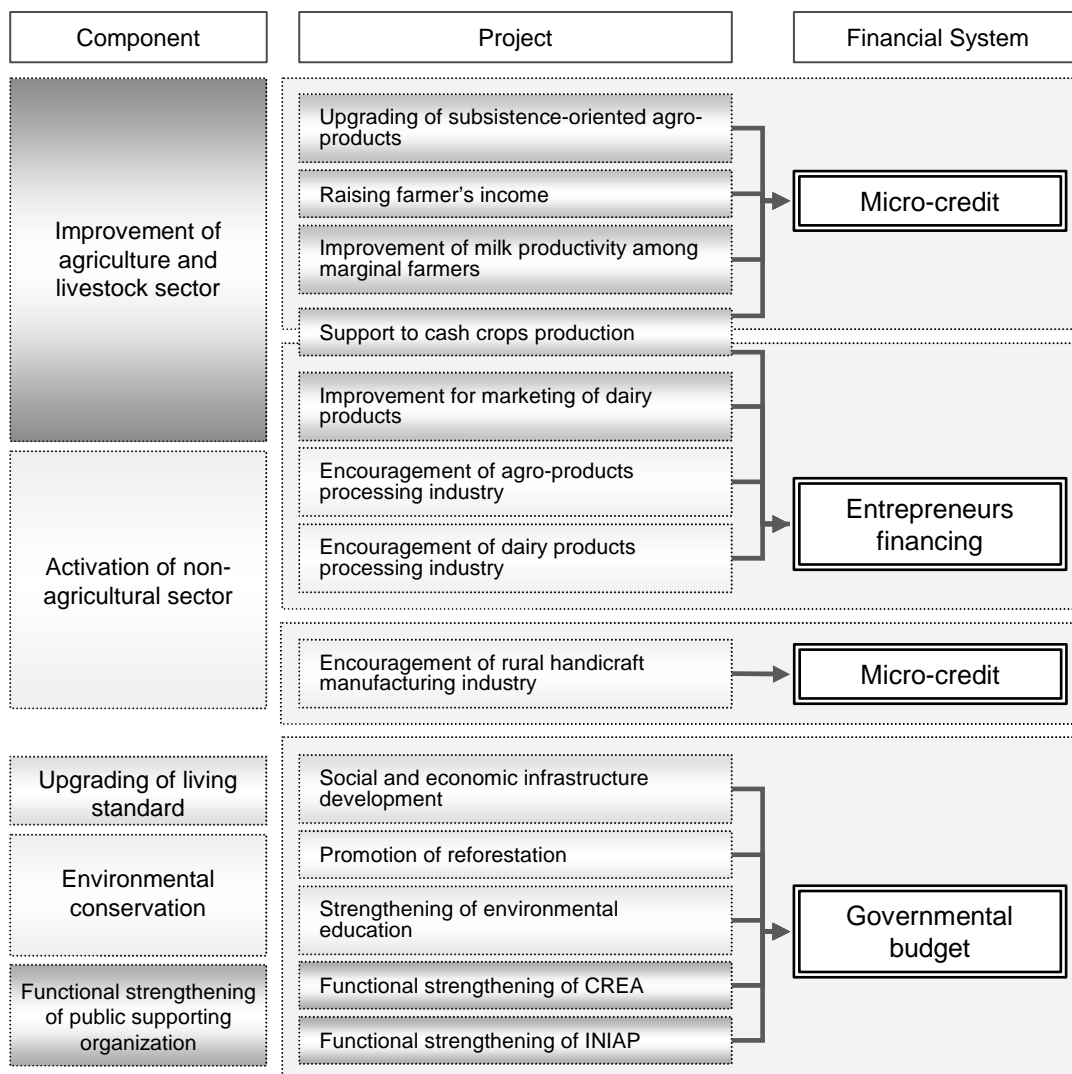


Figure: Classification of Project by Source of Fund

SPECIFIC PILOT PROJECTS

CHAPTER 5

STUDY ON DEVELOPMENT FOR REACTIVATION
OF PRODUCTIVITY AND POVERTY REDUCTION
IN THE CENTRAL-SOUTHERN REGION
OF THE REPUBLIC OF ECUADOR

- FINAL REPORT -

August, 2005

CHAPTER 5 SPECIFIC PILOT PROJECTS

The six (6) Pilot Projects in execution at the Study Area aim to evaluate the purposes defined in the Master Plan. The main objective is to find the proper procedure to mitigate poverty in the region, determining a new development strategy and methodology.

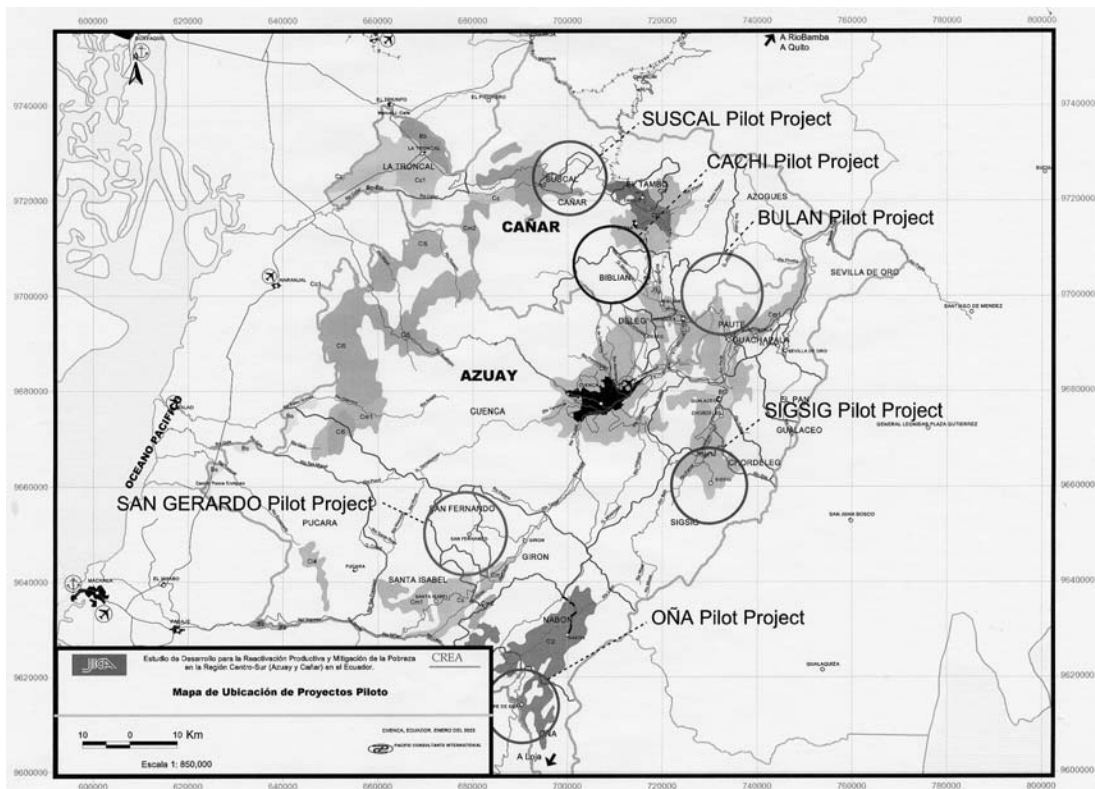


Figure: Location Map of the Pilot Projects

5.1 General Conditions of the Implementation Areas for the Pilot Projects

The socio-economic and natural conditions in the selected six pilot projects areas shall be described hereinafter:

5.1.1 Sigsig

The annual rainfall rate at the Sigsig zone is 760 mm, the maximum volume of 90 mm is during April, and during the whole year the volume of evaporation is higher than the rain volume, so irrigation is absolutely necessary in agricultural zone to increase productivity of the main products (mixed production of corn and leguminous) and to the introduction of value added vegetable cultivation. However the existing irrigation system maintained since the Inca period, allows irrigation of only 15 % of the arable surface.

On the other hand, migration is relatively low compared to other zone and each community is well organized and reinforced with the figure of a leader. For the construction of common use installations, always the collective work system was employed through the *Minga*. For basic projects for the collective benefit an organization structure with the member's collective participation model is indispensable; being needed a sustainable operation, control and maintenance system considering the existing organization.

Table: Socio-economic and Natural Conditions for Sigsig

Estimated annual income (US\$/HH/yr)	Main income source	Main agricultural products	Average farmed surface (by family)	Grade of Displacement to other places
US\$ 2,518	Hat sales Day work Cuy sales	Corn, Sweet pea, Cuy raising	0.39 ha	10%

5.1.2 Suscal

Suscal is the zone with the highest poverty level in the Study Area, adult males, that are the main source of labor, leaves to Cañar or to the Coast to work in the civil construction and in the sugar cane crop, as temporary workers. Subsistence agriculture with low productivity due to the dependence on climate variations is practiced, generating instability even to assure their own food.

Due to the reasons mentioned above, technological transfer of simple application in order not to overburden the beneficiaries and presenting high results concerning spread to other zone is required, to achieve the increase of self supply production.

Table: Socio-economic and Natural Conditions for Suscal

Estimated annual income (US\$/HH/yr)	Main income source	Main agricultural products	Average farmed surface (by family)	Grade of Displacement to other places
US\$ 2,737	Animal sales Migration	Corn, Potato, Milk production	0.40 ha	More than half of the male population has migrated to other areas

5.1.3 Oña

Oña presents a relatively high concentration of population in poverty conditions. On the other hand, it counts on with irrigation installations, but the spread of techniques is not sufficient and the potential of the irrigation installations is not well used. Although it is a poor zone, compared with others, the migrant population is not significant.

Table: Socio-economic and Natural Conditions for Oña

Estimated annual income (US\$/HH/yr)	Main income source	Main agricultural products	Average farmed surface (by family)	Grade of Displacement to other places
US\$ 2,488	Cuy sales Tomato sales	Corn, Tomato, Milk production	0.40 ha	More than half of the male population has migrated to other areas

5.1.4 Cachi

More than half of Cachi's inhabitants belong to a quechua speaking native population. The zone does not count on with enough labor force due to the fact that the majority of the population has migrated to other zone of the country or overseas, so during the day the population is composed basically by women, children and elder population.

The area is divided in three productive zone: the high zone of the mountain range used for extensive cattle breeding, the medium height zone of the mountain range with sharp slopes, used for animal farming and for the self supply products farming and the low zone of the mountain range used for potato, corn and beans farming. The economy is generally based on milk production, for the community changed its economic activity to one easier to be managed by women and children. However, productivity is very low due to several factors, such as the small size of properties, topography too accentuated, deficient control of pasture, insufficiency of pasture and deficiency in the

cattle raising techniques. In order to achieve an increase in production volume it is necessary to improve sanitary control, raising control, pasture control and cattle food.

Table: Socio-economic and Natural Conditions for Cachi

Estimated annual income (US\$/HH/yr)	Main income source	Main agricultural products	Average farmed surface (by family)	Grade of Displacement to other places
US\$ 4,470	Milk sales Potato sales Grain sales Migration	Potato, Corn, Melloco, Milk production	0.79 ha	More than half of the male population has migrated overseas

5.1.5 Bulán

The main economic activity of Bulán is the farming of typical Andean fruit making use of the slopes of the “Sierra”, besides the potato and corn farming for self-supply; the productivity of the zone is relatively high. On the other hand, the number of migrants has declined assuring so the labor force. Due to the situation of the zone, in conjunction to the processing of agricultural products, technical assistance shall be introduced to improve the products quality level, with the objective of improving the aggregated value of the same and in consequence, improving the producers income. At the same time, the reinforcement of farmers organization and the development of human resources through technical assistance shall be promoted.

Table: Socio-economic and Natural Conditions for Bulán

Estimated annual income (US\$/HH/yr)	Main income source	Main agricultural products	Average farmed surface (by family)	Grade of Displacement to other places
US\$ 5,119	Fruit sales Potato sales Cuy sales	Potato, Corn, Tomato, Peach, Apple, Cuy raising	1.16 ha	Few have migrated

5.1.6 San Gerardo

The main economic activity in San Gerardo is cattle raising generating a relatively high level of productivity compared to other zones. However, the commercialization unit price reaches nearly half of that of the products being processed through a refrigerator, due to deficiency in the storage of products and the control structure. As a result, low profitability becomes the main problem. On the other hand, the population is composed basically by women, children and elder people due to the migration problem, causing a scarcity in labor. Under such conditions, it was concluded that it is more important to increase profitability than productivity.

Table: Socio-economic and Natural Conditions for San Gerardo

Estimated annual income (US\$/HH/yr)	Main income source	Main agricultural products	Average farmed surface (by family)	Grade of Displacement to other places
US\$ 9,721	Milk sales Migration	Milk production, Corn	13.96 ha	More than half of the male population has migrated overseas

5.2 Execution Items and Results of Each Pilot Project

The 6 Pilot Projects were implemented in the different target areas of the Study Area according to the objectives and contents described below. Furthermore, 5 common goals to the Pilot Projects have been established to evaluate the possibilities.

- Collective activities with the cooperation of the population
- Formation of leaders through the project
- Establishment of a trusting relationship among the population and the supporting

organizations

- Agricultural and livestock development by minimum investment
- Self sustainable development of the project by the beneficiaries

Pilot project	Verification Items and Results
<p>(1) Project to improve life conditions and construction of basic production infrastructure</p> <p>Social and economic infrastructure development (Sigsig)</p>	<p>As strategy for the execution of the present Pilot Project the active participation of the beneficiaries through the <i>Minga</i> is required, with the objective of constructing irrigation infrastructure for the 142 producer families. Such activities are developed together with the CREA, the Sigsig Municipality and the Users Board, and the functions to be developed by each entity for the construction is specified as follows:</p> <p>CREA: Design, utilization of construction equipment and part of the civil works, material for irrigation installation (study team).</p> <p>Local entity: Part of the financing</p> <p>Users Board: Labor for civil Works, equipment installation works.</p> <p><u>Using of the region potential</u></p> <ul style="list-style-type: none"> • Execution of a project very much desired during long years by the local population • Use the local leadership • Zone close to water sources by the construction of a dam • Support to the farmers association by the participation in <i>Minga</i> activities • Support activities to the association awaking on the importance of the irrigation installation. • Many people dedicated to farming, low migration zone. <p><u>Verification contents</u></p> <ul style="list-style-type: none"> • Strategies evaluation to lower down installation construction costs through <i>Minga</i> activities to construct public installations. • Evaluation of strategies to promote participation in <i>Minga</i> activities for public projects. • Evaluation of strategies to promote the installation management by the same participants through popular participation. • Evaluation of strategies to rationalize water use by the conformation of a users association. • Evaluation of technical assistance by CREA • Evaluation of strategies to promote the participation of local organizations in the execution of public projects.
<p>(2) Project to improve the livestock activity, increasing self-supply products production.</p> <p>Upgrading of subsistence-oriented agro-products (Suscal)</p>	<p>As strategy to promote the productive activity of Tambillo (22 families), the following actions shall be conducted:</p> <ul style="list-style-type: none"> • Creation of a producers cooperative. • Cultivation in collective lots (Potato: 2ha; corn: 1 ha; barley: 1ha; sweet pea: 1ha; totaling 5 ha) and training in farming techniques. • Cultivation in lots for seeds (4 lots: cultivation of 0.5 ha per product; total 2 ha) and seeds maintenance. • Demonstrative lots to compare classes of seeds. • Profits distribution. • Seeds devolution (130%) devolution of agricultural materials used for cultivation. • At the end of the Project the acquired knowledge concerning farming techniques shall be transferred to other farmers of the neighborhood. <p><u>Using of the zone potential</u></p> <ul style="list-style-type: none"> • Introduction of selected potato, barley and sweet pea seeds adequate for Suscal zone • Promote the interest by visiting more developed areas. • Use the zone leadership and the farmers association of the zone. • Collective learning of farming techniques. • Use the participants self development will • Consciousness building about the responsibility in the devolution obligation. • Close technical assistance.

	<p><u>Verification contents</u></p> <ul style="list-style-type: none"> • Evaluation of strategies to increase food production in poverty zone. • Evaluation of the possibility to introduce sustainable agriculture by the distribution of improved seeds and by the reinforcement of technical assistance to agriculture. • Evaluation of the receptivity to agricultural improvement activities by the part of farmers.
<p>(3) Improvement of livestock activity and increase in the production of subsistence products</p> <p>Raising farmer's income (Oña)</p>	<p>Sustainable agriculture (diversified agriculture) to be introduced in Oña Canton, where the 30 producers of Paredones Bajo shall be the pioneers:</p> <ul style="list-style-type: none"> • Creation of the farmers organization (3 groups composed by 10 producers each) and structuring of a system of compulsory mutual commitment. • Construction of cuy breeders, cuy breeding (10 females and 2 males per family); distribution and technological transfer to the neighborhood farmers. • Introduction of tomato cultivation with organic fertilizers (300 stems per family) and production 10% to be paid (for the local school). • Introduction of grain cultivation with organic fertilizers and 10% payment of the production (for other producers). • Participation in workshops for the diffusion of improved farming techniques. • Expansion of activities applying the given back cuys. <p><u>Using the zone potential</u></p> <ul style="list-style-type: none"> • To improve the population interest in the introduction of improved cuy and improved tomato. • Use the local leadership capacity • Use the participants will to develop • Association activities with the population consensus, technical assistance activities. • Awareness on the realization of services to the community by devolution obligation. • Execution of a close technical assistance where the association participants learn the techniques. <p><u>Verification contents</u></p> <ul style="list-style-type: none"> • Evaluation of strategies to introduce sustainable agriculture. • Evaluation of the most appropriate diversified agricultural management system (agricultural production and small animals husbandry) • Evaluation of organic agriculture introduction. • Evaluation of strategies for technical diffusion by the same producers.
<p>(4) Project for the improvement of livestock activity, increase in the production of milk for self-consumption.</p> <p>Improvement of milk productivity among marginal livestock activity (Cachi)</p>	<p>15 producers at the Cachi zone shall be selected to implement 3 model properties for dairy cattle and 12 farmers of the neighborhood shall be trained to increase milk production volume of the beneficiaries from 5.9 l/day to 7.0l/day, and it is expected that model producers increase their production in around 10 l/day. In order to achieve such objectives, the following actions shall be executed:</p> <ul style="list-style-type: none"> • Policies to improve pasture. • Improvement of cattle raising techniques (pasture control, raising control, sanitary control and measures against erosion). • Structuring of a selected seed bank. • Milk distribution to schools. <p><u>Use of the region potential</u></p> <ul style="list-style-type: none"> • Promote the participants interests of the zone to introduce improved pasture. • Use the participants will to improve livestock activity. • Promote the interest by visiting more developed zone. • Support to the farmers association by leadership building. • Close technical assistance <p><u>Verification of contents</u></p> <ul style="list-style-type: none"> • Evaluation of the introduction of livestock activity preserving the environment. • Evaluation on the increase of milk production by small livestock farmers. • Evaluation of the strategy to introduce improved pasture.

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- (5) Project to improve livestock activity, support for products modernization
- An Andean fruit processing plant shall be installed by the same producers, previous consensus among them, to create an agricultural products processing plant in Bulán zone, main production center of Andean fruits.
- Consensus on the participation of the farmers organization in the Project.
 - Farmers organization functions reinforcement to receive technical training in fruit production.
- (6) Project for the reactivation of extra-agricultural activities, introduction of agricultural products processing
- Preparing of the plant and equipment for agricultural products processing.
 - Participation and promotion of technical training workshops for agricultural products processing.
 - Management of the agricultural products processing plant
 - Participation in workshops for the diffusion of techniques to improve farming techniques.
 - Creation, management and sales of products in a demonstration shop.

Support to cash crops production (Bulán)

Use of the zone potential

- Execution of technical assistance based on the desires of the population.
- Promotion of the farmers activities through the installing of the association.
- Participation of participants in the products processing project from the planning stage to the construction.
- Support in the market opening.

Verification Contents

- Evaluation on the introduction of agricultural products processing in the zone.
- Evaluation of the market stability for Andean fruits through the opening of new markets.
- Evaluation of strategies to obtain aggregated value to agricultural products.
- Evaluation on the introduction of a agricultural management model directed toward the market.

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- (7) Project for the improvement of livestock activity, improvement on the commercialization of milk products.

In the dairy production zone in San Gerardo, 15 milk producers shall be selected to conform a producers organization enterprise aiming the rationalization of commercialization, at the same time a collective storage and dispatch center and a processing plant to increase the aggregated value of products shall be installed.

- Conformation of the work group.
- Definition of an agreement between the cooperative and elaboration of an acquiescence agreement of the group activities.
- Preparation of the local for the installation of the collective storage and dispatch center.
- Installation of waterworks, gas, electric power and painting of the place.
- Works for milk quality control storage and dispatch at a group level.
- Participation in technical training workshops.
- Installations amplification (considering the possibilities in the volume increase due to an increase in the number of associates).
- Call to new associates.
- Technology transfer to new associates.

Improvement for marketing of dairy products (San Gerardo)

Use of the zone potential

- Construction of a plant accordingly to the participants requirements.
- Construction and management of the plant by the same participants.
- Motivation by supporting the association.
- Support in market openings

Verification of Contents

- Evaluation of the strategy to improve milk commercialization system.
 - Evaluation of strategies to improve dairy products quality
 - Evaluation of strategies to promote dairy products processing.
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5.3 Evaluation of the Pilot Projects

5.3.1 Level of Objectives Achievement

The objectives and achievement of each Pilot Project are described in the table below. It was confirmed that the strengthening of the supporting agency activities and the injection of a small amount of fund were effective in alleviation of poverty in the regions, although the fluctuation was observed.

Pilot Project	Objectives Achievement Level (As of June, 2005)	
	Goals	Achievement Level
Social and economic infrastructure development (Sigsig)	Construction through the <i>Minga</i>	Almost all members participated in the <i>Minga</i>
	Self-management	Presently test operations are being conducted in a community.
	Vegetable cultivation	Some families have already started said activity
Upgrading of subsistence-oriented agro-products (Suscal)	Potato crop	Start: 1.8t/ha, End : 6.5t/ha
	Sweet pea crop (new)	Start: without production End : 3.2t/ha
	Barley (new)	Start: without production End : 1.4t/ha
	Technology transfer and seed distribution to neighbors	Some families have started already.
Raising farmer's income (Oña) (30 families)	Cuy breeding and devolution by part of the pioneers.	Fulfilled the goal, all families breed cuys. Around 70% have complied with the devolution.
	Tomato farming and devolution	All members have started tomato harvest. Not given back yet because they are still in the growing stage.
	Vegetable farming and devolution	All members started farming and have finished devolution.
	Amplification to neighbors.	The 30 members have increased to 100 by the devolution system. Up to this date two diffusion workshops were conducted by the association and the members to the farmers of the surroundings, and the amplification goal is to be achieved.
Improvement of milk productivity among marginal livestock activity (Cachi)	Increase in milk production	Milk productivity by animal has increased to about 2 l/day.
	Pasture improvement	Finished in all families, necessity to improve pasture management. In relation to improvement measures, materials have been given back 98%.
	Electric fence introduction	Electric fence introduction has been finished with technical assistance from CREA and technology transfer has been achieved concerning installation and its management.
	Amplification to neighborhood families	Presently it has been amplified to neighbors, one new family has been incorporated and 9 more are in the waiting list.
Support to cash crops production (Bulán)	Increase in fruit productivity	100% increase (Babaco), 30% increase (Tomato)
	Reduce the percentage of tomato mortality	Improvement of the situation with cultivation methods training.
	Project management by the cooperative	After the construction of the installation, processing training has been conducted and presently they are in the commercialization stage but without the sanitary certificate marketing is impossible.
Improvement for marketing of dairy products (San Gerardo)	Utilization of the collective storage system	Utilized collectively by 15 families.
	Increase the storage capacity in 50%	Delay in the project, presently measures are being taken to improve capacity.

5.3.2 Beneficiaries Situation after the End of Each Pilot Project

Pilot Project	Beneficiaries Situation (As of June, 2005)
Social and economic infrastructure development (Sigsig)	<p><u>Representative opinions, requirements</u> Beneficiaries have waited more than 10 years to obtain irrigation water and have a total understanding of the necessity and importance of the Project. With the introduction of irrigation they are requiring the introduction of intensive agriculture. Besides, irrigation water is being used for basic daily needs.</p> <p><u>Zone development</u> With the possibility to develop intensive agriculture for the production of new vegetables using irrigation water, possibilities to contain migration increases.</p> <p><u>Empowerment building</u> Beneficiaries have gained leadership through the construction and management of installations by themselves. CREA is helping with the procedures to conform an irrigation water users association, Technical assistance for the introduction of new products (fruits, vegetables) using irrigation.</p>
Upgrading of subsistence-oriented agro-products (Suscal)	<p><u>Representative opinions, requirements</u> Production increase of self-consumption products has been achieved, at the same time nutritional conditions have improved, surplus has been sold and distribution to neighborhood farmers has been attained. Beneficiaries want to use the supplies input to amplify the project.</p> <p><u>Empowerment building</u> Beneficiaries are cultivating by themselves with improved seeds. Some are training neighborhood farmers.</p>
Raising farmer's income (Oña)	<p><u>Representative opinions, requirements</u> Beneficiaries are very satisfied with the Project once cuy sales have increased their agricultural income. Neighborhood producers are also interested in the project and the number of candidates to participate in the project is increasing. Close technical assistance has been also important for cuy breeding and tomato cultivation, so they request the continuity of technical assistance as also support for products commercialization.</p> <p><u>Zone development</u> Increase in agricultural income may prevent the rural exodus. The majority of participants in the present project are young and their expectation concerning the project is very high. Once the project started, no case of persons leaving the zone was reported.</p> <p><u>Empowerment building</u> Increase in the number of associates (by cuy distribution), by their own initiative. Elaboration of management plans and association norms by their own initiative. Development of a financing system by their own initiative. (7 families are constructing breeders financed by the association) Products distribution to the local school by their own initiative. Technology transfer to neighborhood farmers by their own initiative. They are elaborating the association future plans by themselves (commercialization plan, association financial plan, among others).</p>
Improvement of milk productivity among marginal livestock activity (Cachi)	<p><u>Representative opinions, requirements</u> Beneficiaries feel very satisfied with the Project as the burden of work on women has been alleviated. Milk production improvement has also increased the family income. From now on, they require technical assistance in questions of cattle sanity and reinforcement of the association that has just started. Improved pasture has also increased productivity gradually but they also require technical assistance to improve cattle quality in the future.</p> <p><u>Zone development</u> This is a zone with strong migration overseas so the majority of the population is conformed by women, children and elder people. As the objective was to alleviate the work burden, it could be observed that the few young male participating in the project left the community to do temporary jobs in the surrounding zone.</p> <p><u>Empowerment building</u> Creation of a Seed Bank (participants capital), they are developing the Project using said capital. Technology transfer to neighborhood farmers by their own initiative.</p>

Support to cash crops production (Bulán)	<p><u>Representative opinions, requirements</u></p> <p>In relation to fruit production, productivity itself has increased so participants are satisfied with the Project. In relation to fruit processing, due to several procedure matters problems, it is not operating yet, but the importance of carrying out group activities has been verified. However, enterprise operation needs capital and as it is a shared management, it is hard to gather said capital. Also, a problematic point for this project is the fact that a commercialization channel is not assured.</p> <p><u>Zone development</u></p> <p>The present zone has been always a fruit producing zone and they do not suffer the rural exodus. Increasing fruit productivity expectation of more work has also increased, so it could help detain the migratory tendency in the surrounding zone.</p> <p><u>Empowerment building</u></p> <p>Commercialization activities of the products have been mainly conducted by the farmers association, taking decisions concerning production plans and goals. In order to effectively start operations they are procuring financing by other institutions, making contact with them. By developing sales activities they have looked for new products to be marketed and have solicited technical assistance to produce them.</p>
Improvement for marketing of dairy products (San Gerardo)	<p><u>Representative opinions, requirements</u></p> <p>With the installation of the cooling tank and the structure of collective storage and dispatch, aggregated value has been added to milk, being verified the income increase. However, due to the milk contamination and by change in buyers, a stable dispatch could not be maintained, causing change of participants. Beneficiaries require assistance concerning control measures to mitigate contamination and reinforcement in commercialization.</p> <p><u>Zone development</u></p> <p>In the present zone, migration overseas occur and the majority of population is conformed by women, children and elder people, it is expected that the increase in employment could detain the exodus.</p> <p><u>Empowerment building</u></p> <p>They are planning to amplify the installations by theirs own initiative. They are elaboration the association norms by their own initiative.</p>

5.3.3 Situation of the Counterpart Institution

Up to the realization of the present project there was not a cooperation relationship between the CREA and the INIAP, and through this opportunity they could start an interchange of opinions. Both entities have activities that are doubled but CREA renders small size technical assistance such as minor irrigation installation, reforestation, livestock, while INIAP conducts works in the investigation field, diffusion of new variety of seeds, agricultural technology transfer of crops, among others. Through the Pilot Projects the position of both institutions in the management of projects could be verified. The impression left is that while CREA acts with responsibility in relation to each Pilot Project, INIAP executes projects in a spontaneous manner. Anyway, funds transferred by the Central Government for both institutions are very limited generating limitations for the execution of projects.

5.3.4 Results for each Pilot Project

Sigsig

It has been possible to verify that the execution of a project desired by the population is feasible to be carried out at the participants level by supplying the necessary input (construction equipment and material), the same population feels motivated and the project can be executed with low investments.

Suscal

Although participants had the will to improve agricultural management, they had not received the proper assistance up to the date so they could not get out from the poverty circle. By executing a small scale supporting project (improved seeds supply, demonstration of fertilizers utilization techniques), production increment can be measured in a small area, making it possible to verify the benefits for life quality improvement. With the present project, it was possible to verify the importance of using

improved seeds and the use of fertilizers. Participants of the surroundings have also shown interest and wish the amplification of this project.

Oña

The present project serves as a guide for farmers and is concerned with the improvement of agricultural management. It could be verified that with the introduction of animal breeding and cultivation of products, agricultural practices can improve the level of life. Neighborhood participants are very interested in the project, and when beneficiaries conduct demonstrations to participants of the neighborhood, the level of participation is very high and they have much interest in participating in the project. The project was launched with 30 participants but they were increased to 100 as planned (June 2005). This project started as a project aiming to improve productivity of self-consumption products and is related to the improvement of life quality. This project verifies that even with a small input it is possible to improve substantially the existing conditions if proper technical assistance is provided.

Cachi

The present project serves as a model for the reactivation of livestock activity in “sierra” zone that suffer from the problem of population migration overseas and other parts of the country. With a small investment, livestock can be improved, alleviating work for women and some families on the neighborhood are using this project as reference to put it into practice. Also, the producers association has conformed a seed bank making it possible to incorporate new members and to expand improved pasture areas of the pioneer members; presently there are candidates from other associations, so the result has been amplified to other localities of the zone. However, results on milk production occur gradually and it is necessary to provide producers with the proper resources for its management.

Bulan

The support to modernization of products obtained satisfactory results however it is very difficult to obtain results concerning the introduction of products processing. Associated members have learned the jam processing techniques; however commercialization is very difficult even though market research on the product was conducted at the commencement of the project, being necessary a greater investment, so more considerations will be necessary to the execution of the present project. The present project cannot be considered successful; in order to promote agricultural products processing, a more careful evaluation shall be necessary.

The reasons for not obtaining success are explained below:

- Installation construction was in charge of the study team so the perception of farmers toward the project ended up as the traditional one, that is the dependant type.
- As they did not have devolution obligations in relation to the installation, it was not possible to awaken the pressure or motivation in relation to the project.
- Difficulties in commercialization weakened the participants enthusiasm.
- Participants did not have experience in agricultural products processing.
- Participants did not desire to invest in the enterprise.

Such items serve as important reference at the moment of agricultural products processing reactivation.

San Gerardo

Structuring of a collective dispatch system through the diffusion of livestock techniques and introduction of a pasteurization tank has allowed producers to improve their income. Diffusion of techniques has brought significant results in spite of the small scale of the project. Also, the same farmers have verified that by structuring a collective dispatch system allows even small producers, when associated, to obtain collectively income to be distributed, so that the system works well.

5.4 Inputs for the Master Plan

The present project has executed 6 Pilot Projects in order to accredit the direction of the Master Plan. The main objective of each Pilot Project is to evaluate the strategies to mitigate poverty in the region and to verify the evolution of each Pilot Project in order to supply details for the execution of the master plan.

Following, a summary of the results verified in the Pilot Projects are presented, divided in evaluation items common to all Pilot Projects:

1. Possibility of capacity building of the group by the cooperation among participants.
2. Possibility of the group collective capacity empowerment, based on the strength of the same communities and leadership building during the process.
3. Possibility to construct a trust relationship between the supporting entities and the participants.
4. Possibility to develop farming activities with minimum investment values.
5. Capacity of self sustainable development by part of the beneficiaries.

5.4.1 Strategy of group capacity building through the collaboration among the participants.

To reinforce cooperation among the participant members it is necessary to promote the individual capacity of each one, and so it is necessary to improve the confidence in the activity each develops. An efficient way to promote such situation is to direct actions so that neighbors take interest in the activities developed by the participants in the project and also through the rendering of social services to the community allowing them to occupy a place in the society. Also, an effective strategy to build group capacities is to open a space where participants can express themselves reinforcing their presence. For such it is necessary to implement the following strategies.

- Discover the capacities and necessities of participants (through the reinforcement of institutions CREA and INIAP)
- Reinforcement of participants organizations (through the reinforcement of institutions CREA and INIAP)

It is also necessary to verify the situation of the zone, conforming groups to members that can effectively participate in the activities. For projects requiring a certain technical level such as agricultural products processing, it is necessary to select members with entrepreneurial activities experience and interested in the conduction of entrepreneurial activities. (At the moment of selecting projects to be part of the master plan).

Participants should be aware of the responsibilities and obligation by participating in the project, being needed strategies they can feel enthusiasm and fullness with the realization of the project.

5.4.2 Strategy of leader formation in the zone

The existence of a leader in the zone determines the project success or failure, the stronger the leader, greater is the possibilities of success for the project. Thus, leadership building is a very important point to reactivate the zone. Expressly, in each zone there are capable human resources so in the future they could perform a leading position, so leadership building through the execution of the project is effective. Introduction of strategies to put into practice leadership building programs are necessary (through the reinforcement of institutions such as CREA and INIAP).

5.4.3 Development of trust relationship between the supporting entity and the participants

The trust relationship between the support entities and the participants is an important factor for the good conduction of the project and to win the participants trust it is necessary to count on with capable experts of entities that know the required techniques. For such, specialized formation at the supporting entities is an important point for the development of future projects. Technical capacities should be

improved in the following aspects.

- Reinforcement on the capacities to understand the basic requirements of beneficiaries.
- At the initial stage of the master plan, at the structuring of the several projects, it is necessary to prepare personnel of the supporting entities concerning association conformation, launching of a project and personnel to orient the management of projects at the initial stage.
- Assure the technical capacity to provide the required technical assistance to the participants (Andean fruits cultivation, small animals husbandry, cultivation techniques of basic staple food, pasture cultivation techniques, milk handling techniques, irrigation installations, civil works, equipment, conformation of participants organization, among others).
- Reinforcement of the supporting entities capacities (rural infrastructure projects techniques, plan elaboration, diffusion of agricultural techniques)
- Reinforcement of the supporting entities budgetary capacity for the execution of projects (access to several budgets)

5.4.4 Development of projects with small amount of investment

The General Budget of the Country is very limited so it is necessary to carry out regional development projects using minimum resources. To develop a joint public work project the participation of the population through the *Minga* and also of the local organizations are required. At production level, it is necessary to supply production input such as improved seeds with devolution obligation, avoiding free distribution as much as possible. The following strategies should be implemented:

- Replacement of old equipment to be lend to the farmers associations that require them.
- Supply the necessary construction material based on the plan to be distributed to the population.
- Collective construction based on the mutual trust between the CREA, the local entity and the participants.
- Development of improved seeds and production techniques (through the institutional reinforcement of CREA and INIAP)
- Activation of technology transfer activities (through the institutional reinforcement of CREA and INIAP)
- Structuring of an agriculture credit system to promote the will to improve production, together with the reinforcement of the devolution consciousness.

In projects of basic infrastructure construction projects results are not immediately felt, self-management system and the introduction of new products take some years, so 5 to 6 years are necessary to evaluate again the situation of the project.

To support small producers, the supply of input at the proper quantity and improvement of the existing products are presenting immediate results in productivity and income. For micro-projects, institutions like Jardín Azuayo (credit cooperative working in the Azuay zone) that manage support funds without interests could be used; for the project self sustainability a system of micro credits should be introduced so the association and the beneficiaries participate in the project with responsibility.

For projects of technical assistance to the agriculture, realization of diffusion activities in the same farmer's lot integrates with the beneficiary daily tasks facilitating the communication between the technical assistance and the farmer, increasing the project efficiency.

5.4.5 Self sustainable capacity building by the beneficiaries

To promote capacity building aiming at self sustainability, it is necessary to elaborate well done manuals, and based on them, improve the capacity of beneficiaries. It is also important the activity of technological transfer to the neighbors by the same beneficiaries. Based on such factors it is necessary to implement the following strategies.

- Continuous technical assistance by CREA referring to the installation administration and water management.
- Preparing and distribution of technical manuals to serve as base to the agricultural activities of each farmer organization (through the institutional reinforcement of CREA and INIAP)
- Orientation concerning the importance of devolution obligation and proper technical orientation concerning agricultural credit (through the institutional reinforcement of CREA, INIAP)
- Reinforcement of the beneficiaries capacities through technical assistance activities (through the institutional reinforcement of CREA, INIAP)

In case of zone such as the present where soil erosion is very scarce, consciousness of participants concerning environmental preservation is very low, so it is necessary to reinforce consciousness on environmental problems together with the project execution.

In cases such as cattle sanity that requires constant visits by experts, it is necessary to implement a structure where assistance, from free visits, turn into paid visits and later the farmers association could hire a technician reinforcing sustainability. Reforestation activities are desirable as strategy to prevent soil erosion.

It is necessary to go on with technical assistance concerning the record of the organization activities, reinforcing management activities.

THE MASTER PLAN FOR REACTIVATION OF PRODUCTIVITY
AND POVERTY REDUCTION
IN THE CENTRAL-SOUTHERN REGION

CHAPTER 6

STUDY ON DEVELOPMENT FOR REACTIVATION
OF PRODUCTIVITY AND POVERTY REDUCTION
IN THE CENTRAL-SOUTHERN REGION
OF THE REPUBLIC OF ECUADOR

- FINAL REPORT -

August, 2005

CHAPTER 6 MASTER PLAN FOR REACTIVATION OF PRODUCTIVITY AND POVERTY REDUCTION IN THE CENTRAL-SOUTHERN REGION

6.1 General Profile of the Master Plan

Purposes and roles of development components and specific projects were disclosed in Chapter 4 “Basic Development Concept” and an impact of pilot projects (high-priority projects) was verified in Chapter 5 “Pilot Projects”. Pursuant to these chapters, a concrete scope of thirteen (13) projects included in respective development component is described hereinafter.

6.1.1 Development Components and Purposes

It was proposed in Chapter 4 that an implementation of specific projects to be formulated in line with the development components consisting of “Upgrading of living standard”, “Improvement of agriculture and livestock sector” and “Environmental conservation” is of importance. On the other hand, in order to put each component mentioned above into implementation, it is indispensable to implement in parallel “Functional strengthening of public supporting organization” that aims to faster capacity building and empowerment of public supporting organizations with regard to technical assistance to farmers.

In view of producing more sustainable and effective outcome, it is essential that the Master Plan should be carried out by the relevant public agencies in collaboration with beneficiaries. In this context, the relevant public agencies should take charge of financial arrangement for implementation of the Master Plan as well as of forging measures for supporting technical aspect, meanwhile the beneficiaries should play an important role in operation and maintenance of completed projects envisaged in the Master Plan.

With implementation of the said development components, it is anticipated that the Master Plan should bring about capacity building of farmers/farmers’ organizations in the fields of agricultural and livestock farming technologies and operational and managerial method of completed projects as well as raising farmers’ income, and that these outcomes, in turn, should alleviate poverty condition of local people gradually.

In the course of implementing the development components of the Master Plan, emphasis should be laid on promotion for substantial participation of the beneficiaries (farmers) in every phase for implementation of the components, under limited financial resources of the national budget of Ecuador. In addition, it should be stressed that, so as to realize self-reliant and sustainable development of the region, the implementation agencies should orient the beneficiaries to play a focal role in implementation of the development components and design a program for empowerment of the beneficiaries in the course of the implementation of the Master Plan.

The direct beneficiaries of the Master Plan shall be focused on small and marginal farmers. Nevertheless, core labor force of these small and marginal farmers are represented by women and aged person because male head of household are absent in most of the households to have left the region as in seek of job opportunities as migrant, so planning of the development components should be prepared with attention paid to working force of small and marginal farmers.

6.1.2 Development Components and Projects

In the Basic Development Concept of Chapter 4, the following projects have been proposed to put development components into implementation.

Table: Development Component and Projects

Development Component	Project
1. Improvement of agriculture and livestock sector	1.1 Upgrading of subsistence-oriented agro-products 1.2 Raising farmer's income 1.3 Improvement of milk productivity among marginal cattle farmers 1.4 Support to cash crops production 1.5 Improvement for marketing of dairy products
2. Encouragement of non-agricultural sector	2.1 Encouragement of agro-products processing industry 2.2 Encouragement of dairy products processing industry 2.3 Encouragement of rural handicrafts manufacturing industry
3. Upgrading of living standard	3.1 Social and economic infrastructure development (agriculture and livestock, education, (hygiene) health, medical service, roads)
4. Environmental conservation	4.1 Promotion of reforestation 4.2 Strengthening of environmental education
5. Functional strengthening of public supporting organization	5.1 Functional strengthening of CREA 5.2 Functional strengthening of INIAP

1. Development Component: "Improvement of Agricultural and Livestock Sector" proposes to carry out projects that envisages to make use of regional physical potentials and that are requested eagerly by farmers. Target beneficiaries of projects to be implemented vary by economic and social stratum of farmers; targeting the farmers engaging in low-profitable agricultural and livestock production, the projects: 1.1 Self-sufficient-oriented agro-products, 1.2 Raising farmer's income and 1.3 Increasing milk production shall be introduced, meanwhile the projects: 1.4 Supporting to cash crops production and 1.5 Improvement for marketing of dairy products, shall be implemented with a target of the farmers having productive infrastructures but engaging in low-profitable agricultural and livestock production. In response to the request of farmers' organization for improvement of production activity, these projects shall be carried out putting them as the core body for implementation. Public agencies shall take charge of rendering supporting services relevant to agricultural technology and coordination for procurement of necessary fund by the part of farmers' organizations.

2. Development Component: "Activation of Non-agricultural Sector" intends to foster agro-industry related with Andean fruits and dairy products, so that effective use of non-standardized agro-products or surplus ones to have been consumed for self-sufficiency of producers should be made and, as a consequence, the value of these products should be added. With implementation of the projects, it is anticipated that competitiveness of agricultural production of the region as a whole should be enhanced and an expansion of market and creation of job opportunities at rural area should be attained.

3. Development Component: "Upgrading of Living Standard" aims to upgrade living and agricultural production environments of people in rural areas by means of development of social infrastructures. Projects shall be implemented in response to the request of the local people to local governments and, in view of undertaking the operation and maintenance of complete project by beneficiaries, participatory approach of the beneficiaries shall be employed in their implementation. This is to say that projects shall be carried out by communities and supporting agencies shall involve in planning, procurement of construction equipment and materials and technical advice in execution of construction works.

4. Development Component: "Environmental Conservation" is represented by such projects as have a purpose to conserve natural resources that constitute productive base for local people. It is proposed to carry out reforestation projects by public agencies in collaboration with beneficiaries; with regard to the areas where people will be benefited directly by implementation of the project, the project shall be implemented under joint effort of public agencies and farmers, meanwhile as for the areas covered by high plateau grass-land zone, reforestation projects shall be implemented by a public agency as the core responsible body. This component shall also comprise reforestation projects to be undertaken by educational institutions, by local government within context of public works (planting of trees lining a street, etc.) and private sector and seedlings required for this reforestation project shall be supplied. In view of enhancement of the significance of reforestation projects and undertaking adequately

operation and maintenance task, environmental education shall be deepened reinforced so as to raise awareness of local people (farmers and students) for conservation of environment.

5. **Development Component: “Functional Strengthening of Public Supporting Organization”** envisages empowerment of human resources in charge of assisting farmers/farmers’ organizations in embarking activities relevant to improvement of agriculture and livestock production and comprises at the same time development of necessary facilities for this enterprise. Target institutions for this project shall be CREA and INIAP, both of which are rendering at present supporting services to farmers. This component tackles with intensification of technical supporting services to be rendered by public organizations in relation with implementation of the rest of the development components.

On the other hand, in relation with the components of “1. Improvement of Agricultural and Livestock Sector” and “2. Activation of Non-agricultural Sector”, structuring of financial system for providing necessary fund for conducting economic activities by farmers and rural organizations are conceived within the Master Plan.

6.2 Project Implementation Procedure

In this section, an implementation procedure for the projects proposed in this chapter is to be described. A summary of relevant activities from announcement to implementation and monitoring of projects is shown in the figure below.

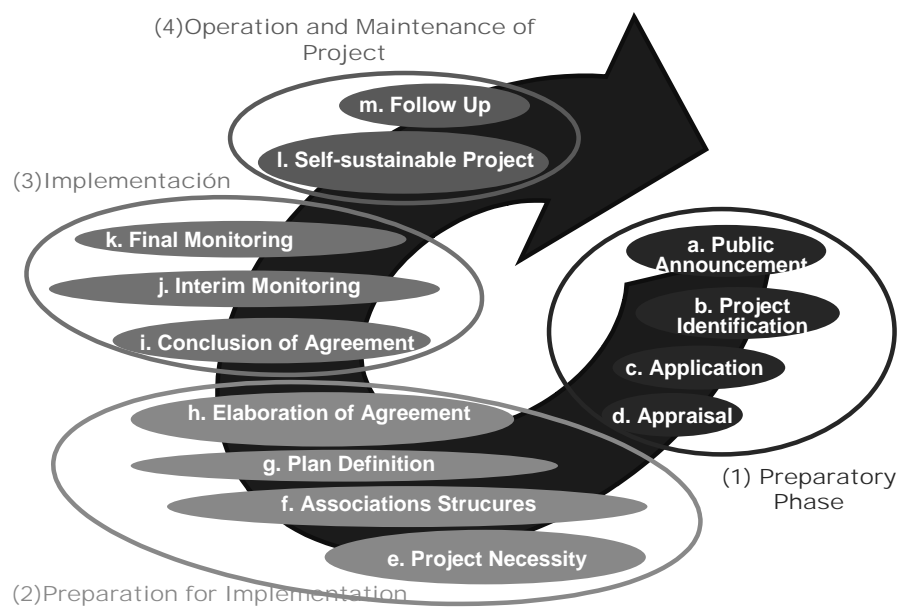


Figure: Project Implementation Scheme

In general, an implementation process of projects is divided into four stages, namely, (1) Preparatory phase, (2) Preparation for implementation, (3) Implementation and (4) Operation and maintenance. A series of procedure from a. Public announcement on implementation of the projects to i. Conclusion of agreement of the stage (3) Implementation shall require public supporting services apart from central activities of the beneficiaries. Monitoring on the contents and progress of the projects shall be conducted in the course of implementation, and adequate corrective measures on the scope of the projects shall be taken, if necessary, according with the results of the monitoring. In view of establishment of self-reliant operation and maintenance system of the projects by the beneficiaries after their completion, m. Follow-up on the projects shall be undertaken by relevant public organizations.

6.2.1 Preparatory Phase

Activities during the preparatory phase shall be carried out according with the table below. Procedures and applications for the candidate zones selection and the definition of the agreement contents are very important actions at the preparation stage. To select the candidate zones the supporting entity shall carry out public relation activities among communities, the concerned entities and the farmers’ organizations. The supporting entity should select the Projects analyzing the applications of the organizations, communities, concerned entities and municipalities through its experience and knowledge.

Table: Actions Contents at the Preparation Stage

Item	Action Contents
a. Public Announcement	Propaganda of the projects contents at radios and TV Explanation to the concerned entities and organizations Explanation to the municipalities
b. Project Identification	Project proposal and eligible zone by the supporting entity Application by the beneficiaries Proposals from concerned entities and organizations
c. Application	Distribution of forms, orientation to filling in, Forms submittal
d. Appraisal	Enquires by the supporting entities (entities, organizations) Application acceptations by the supporting entities Agreement

- a. As for public announcement, it is necessary to provide beneficiaries with the necessary incentive in relation to the project and clearly explain the obligations it implies, so the same beneficiaries understand the importance on implementing the project to allow an efficient implementation and self-sustainable management.
- b. Regarding project identification, public organization shall identify candidate areas for implementation of project, or proposed beneficiaries shall request for implementation of project. Furthermore, proposal to be made by the parties concerned with supporting to farmers shall be considered as candidate projects to be identified.
- c. The representatives of the candidate zones shall prepare and submit the application; once the supporting entity evaluates and approves the same the zone shall be selected. Evaluation shall be carried out in a equitable way and data concerning the farming management structure and level, farmers income, number of emigrants, labor force (men, women), existing association and activities records, contribution collection record for the existing association, shall be included in the application to serve as elements for the appraisal.
- d. Candidate zones shall be selected as a consequence of appraisal on applications but at the present stage only the eligibility of the zone shall be verified. In order to effectively implement the project it is necessary to explain to the beneficiaries that the structure to receive the project should be ready in order to awaken the motivation in the candidate beneficiaries and organizations in relation to the project.

6.2.2 Preparation for Implementation

During preparation for implementation stage it is necessary to investigate the socio-economic situation of the candidate zone, elaborate a detailed operation plan and to start the preparation for the sign of the agreement.

Table: Contents of Activities at the Implementation Preparation Stage

Item	Contents of Activities
e. Explanation on the necessity of projects and forming organization	Problems analysis and evaluation of the project direction through workshops Understanding of the socio-economic conditions of the zone according to the results of the social study.
f. Establishment or restructuring of the farmers association	Establishment of the beneficiaries association Selection of the representatives and persons in charge of the project Selection of beneficiaries by the farmers. Confection of a participation agreement.
g. Elaboration of proposal for the detailed plan	Selection of the activities contents Proposal of the input contents Certification of the beneficiaries duties and rights Selection of items for the division of responsibilities between farmers and the supporting entity Budget definition Reconfirmation of the project's participants Proposal elaboration detailed plan centered on farmers
h. Elaboration of the agreement for the project implementation	Explanation – discussion of the detailed plan proposal to the beneficiaries Definition of the activities, input and budget proposals. Definition of the items for the division of responsibilities between farmers and the supporting entity Definition of the detailed plan proposal.

- e. In explanation on the necessity of projects and forming organization, an effort shall be made to let proposed beneficiaries understand that an implementation of the projects shall be made targeting not individual farmer but farmers' organizations. Public supporting organizations shall hold workshop to undertake problem analysis relevant to candidate areas and to discuss on proposed development plan with the initiative taken by farmers. At the same time, socio-economic survey shall be carried out at the said workshop so as to disclose socio-economic situation of candidate areas and to make a reference in preparing scale and scope of proposed projects.
- f. At the start of the implementation preparation stage it is necessary to establish a project implementation system to build the foundations of a self-developing sustainable project. For such purpose, as explained before, the farmers' organization should select the participants, representatives and the persons in charge of each activity, to restructure the organization and participation between each beneficiary and the association shall be agreed upon. At the same time, workshops, social studies and problems analysis to evaluate the contents of the project activities shall be conducted. The supporting entity shall also evaluate among other aspects the capacity of devolution and the situation of the existing organization to reflect them in the elaboration of the plan centered on farmers.
- g. Objectives adequate to the conditions of each candidate zone according to the results of the study should be established, to elaborate the detailed plan proposal. In the detailed plan it should be included the detailed contents of actions to be executed in the activities plan, the input plan, the technological transfer plan, the management, operation and maintenance plan, budgetary plan, financing plan, devolution plan, monitoring plan, among others. Also, the beneficiaries should take the initiative so they are not a passive part in the implementation plan, and the division of responsibilities among the beneficiaries and the supporting entity as also the rights and obligations of each part should made clear for the project implementation, defining the monitoring indicators to verify the project progress during its implementation.
- h. During formulation of the agreement for the project implementation, the farmers' organization shall try to set an agreement for participation among the members who will participate in the project, after thoroughly explaining and discussing the contents of the detail plan of the project so it can be defined. In the project of the detailed plan, the beneficiaries should not have a passive role but should take leadership for its implementation and the distribution of responsibilities among the beneficiaries and supporting entity as well as stating explicitly the rights and obligations.

In order to establish the farmers’ association, select the beneficiaries, define the plan and elaborate the agreement centered on the beneficiaries at the project implementation preparation stage, the supporting entity shall conduct workshops and hold meetings to carry out the “on the job” technological transfer, concerning the elaboration of the detailed plan. Also, to establish the association, technological transfer shall be carried out through the “Training of the Trainer (TOT) ” method, meaning that trainers shall be trained, directed to representatives and persons in charge, aiming to amplify the diffusion of knowledge and techniques for the capacity building of leaders and persons in charge. In this way, at the project implementation preparation stage human resources training and technological transfer for project implementation are included, so the supporting entity should supply personnel to provide technical assistance concerning association establishment and the detailed plan elaboration.

6.2.3 Implementation

Activities, input, budget and system of the supporting entity are different from the implementation of each project and the contents of each are described on Section 6.3.

Activities common to all projects, according to the detailed plan defined are the agreement between the supporting entity and the beneficiaries concerning project implementation and the introduction of monitoring by which the plan should be reviewed, corrected or complemented according to the project progress conditions.

Table: Activities Contents for the Project Implementation

Items	Activity contents
i. Conclusion of agreement	Agreement elaboration Elaboration of the Addenda centered on beneficiaries Detailed plan definition
Project implementation	Annex (described in section 6.3)
j. Interim monitoring	Monitoring of activities records Detailed plan review, correction and complementation
Project implementation	Annex (described in section 6.3)
k. Final monitoring	Activities records monitoring Proposals for the sustainable execution of the project at the end of the implementation

In i. Conclusion of agreement, technical and financial assistance to be provided by the supporting entity as also by the entities concerned in the project, the execution schedule, budget, devolution duties and input contents shall be settled. According to the contents of said agreement an Addenda containing the concrete project activities shall be annexed. By the sign of the agreement the candidate zone becomes a zone object of the project.

According to the monitoring plan elaborated at the detailed plan, the supporting entity shall conduct one j. Interim monitoring and one k. Final monitoring and as the project progresses, it shall be reviewed, corrected or complemented and the follow up shall be evaluated also. The monitoring indicators, recorded in the Addenda, are the beneficiaries and supporting entities activity records, contents and indicators of the PDM activities, among others, to understand the situation of the production activities.

6.2.4 Operation and Maintenance

After completion of the projects, in an attempt of self-sustainable operation and maintenance of the said project by beneficiaries including organizations as well as expecting synergy effect over surrounding areas, the following activities shall be carried out.

Table: Contents of Activities related to Management, Operation and Maintenance

Item	Contents of activities
l. Implementation of self-sustainable projects	Re-evaluation of the detailed plan Call for new participants
m. Follow-up	Monitoring of the activities records, devolution records, fund management records Follow up by the supporting entity

To execute item l. A project with possibilities of self-sustainable development by the beneficiaries and the supporting entity, at the moment of calling for new members, the project plan should be reviewed based on the knowledge and experiences. In relation to financial aspects, beneficiaries and the farmers association should particularly elaborate a financing and devolution plan, therefore the active participation of the beneficiaries when calling for new members is required. Concerning technical aspects, techniques that farmers considered hard to execute, maintain and be diffused by themselves should be identified, to evaluate together with the supporting entity the type of cooperation that should be provided in such.

After the implementation of the project, the supporting entity should conduct periodical monitoring as an activity of item m. Technical follow-up. Through monitoring the beneficiaries shall analyze the production activities from financial, technical and managerial aspects. With such elements, the need of follow-up in technical and managerial, operative and maintenance aspects shall be analyzed. Also the conditions of self-sustainable development of the project and the amplification of the diffusion shall be analyzed. Said experiences and knowledge shall be reflected in the execution of future projects.

6.3 Implementation Plan of Development Components

6.3.1 Improvement of Agricultural and Livestock Sector

This development component shall consists of five projects: 1-1 Upgrading of subsistence-oriented agro-products, 1-2 Raising farmer's income, 1-3 Improvement of milk productivity among marginal cattle farmers, 1-4 Support to cash crops production and 1-5 Improvement for marketing of dairy products.

The project 1-1 aims to foster farming activity of the areas where farmer adhere to conventional farming practice by distributing improved seeds, rendering technical assistance and providing micro-credit services. The project 1-2 has a purpose to elevate farm income by means of introduction of cash crops, distribution of improved seeds, provision of micro-credit and rendering technical assistance, targeting farmers at remote rural areas where opportunities for attaining income have been deficient. The project 1-3 plans to upgrade livestock farming of small and marginal farmers engaging in dairy production, by means of improvement of pasture, rendering technical assistance on feeding system to cattle and provision of micro-credit. And, the project 1-4 intends to intensify production of Andean fruits and vegetables, competitive products of the region, subject to provision of micro-credit. Finally, the project 1-5 envisages to support for enhancement of quality and marketing system of dairy products in view of attainment of more elevated and consistent farm-gate price.

Detailed contents of respective project are as described hereinafter.

6.3.1.1 Project: Upgrading of Subsistence-oriented Agro-products

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

The central constraints of the agricultural sector in this region is depressed agricultural productivity, which does not enable farmers to attain enough output for self-sufficiency of their households.

This inferior productivity may be attributable to: 1) use of poor quality seeds (farmers are not acquainted with classification of seeds nor are accessible to information on improved seeds), 2) absence of opportunity for receiving technical assistance on crop cultivation (prevention and

elimination of pests, enhancement of technology for fertilizing), 3) use of inadequate amount of inputs, etc.

The majority of small and marginal farmers engage in cultivation of potato and corn, staple diet of the local people, but they are not in a position to attain sufficient production to sustain their families due to depressed productivity of these crops. Because most of male head of households left the region for getting job as migrant worker, farm production is in most of the cases put into hand of women. These women do not have enough time in working at farms, because their activity covers a variety of tasks except for farming. This is a common social problem throughout the region.

(2) Beneficiaries and Target Areas

The target areas shall be the marginal areas where self-sufficient-oriented basic grains are cultivated but are suffering from their insufficient output for self-sufficiency due to inferior level of unit yield. Target areas, among others, are as follows:

Table: Target Areas (Cantons) of the Project

Province of Azuay	Province of Cañar
Zhiña, Puca, Oña, Casadel Corraleja, Susudel, Sigsig, San Bartol, San Juan	Tambo, Cachi, Charcay, Juncal, Suscal

Meanwhile, eligible farmers to be benefited by this project shall be small and marginal farmers engaging actually in production of corn, barley, peas, kidney beans and potato.

Eligible beneficiaries shall not be independent farmers but those belonging to rural organization or those can be worked jointly after participating in rural organization.

(3) Profile of the Project

The operation of this project shall be entrusted to farmers’ organizations, subject to provision of supporting services by INIAP and CREA. Farmers’ organizations shall prepare detailed implementation program. INIAP shall be responsible for supply of improved seeds and provision of technical assistance to farmers, meanwhile CREA shall undertake provision of extension services and rendering technical assistance on operation of the project. INIAP’s supporting services shall cover selection of improved seeds suitable to each target area, production of base seeds and supply of improved seeds to seed bank. On the other hand, CREA’s supports consist of operation of farmers’ organization and establishment of seed bank depending on micro-credit system. Seed bank shall be operated by farmers’ organizations and shall lend farmers improved seeds and farm inputs. Proposed beneficiaries shall embark on unconventional farming activity depending on improved seeds, with technical assistance provided by INIAP and CREA as well as with advisory services on operation of the project given by local governments, universities and NGOs, and shall be responsible for repayment of seeds to be produced at their farms to seed bank. Farmers’ organizations shall render extension services to individual farmers aiming at an expansion of the project through this service.

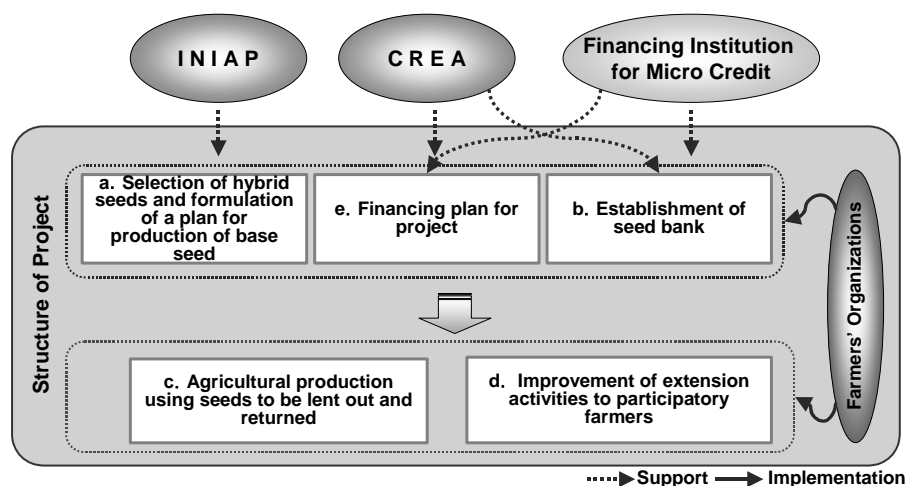


Figure: Overall Project Formation for Upgrading of Subsistence-oriented Agro-products

The sub-projects composing this project are as described hereinafter.

a. Selection of improved seeds suitable to each target area and production of base seed

Candidate crops for increase in production are corn, barley and peas as grains for self-sufficiency and potato as cash crop. Because deterioration of variety is accelerated and varieties of high yield or disease-proof varieties or varieties suitable to climatological characteristics of the area are in absence at present, hybrid varieties shall be introduced taking local physical conditions of each area into consideration. In addition, so as to restrain deterioration in quality of hybrid variety as far as possible, seeds farm shall be established in parallel aiming at maintaining the quality of hybrid varieties within rural organization. In order to maintain consistent agricultural production as well as attain anticipated yield to cope with investment, it is indispensable: (1) to reduce the opportunities of crops vulnerable to climatological damages caused by drought, etc. or attack of pest by means of introduction of varieties with shorter growth period, (2) to save production cost attributable to decrease in use of agricultural chemicals by introducing more disease-proof varieties, and (3) to raise productivity of crops with introduction of high-yield and high-quality (containing high protein) varieties endowed with the merits mentioned in (1) and (2) above.

Hybrid varieties for basic grains already cultivated in the Study Area like corn, barley, peas, faba beans, kidney beans and potato are grown at experimental farm of INIAP. Base seeds shall be produced at farms authorized by INIAP and shall be distributed to seed banks at canton level after inspection.

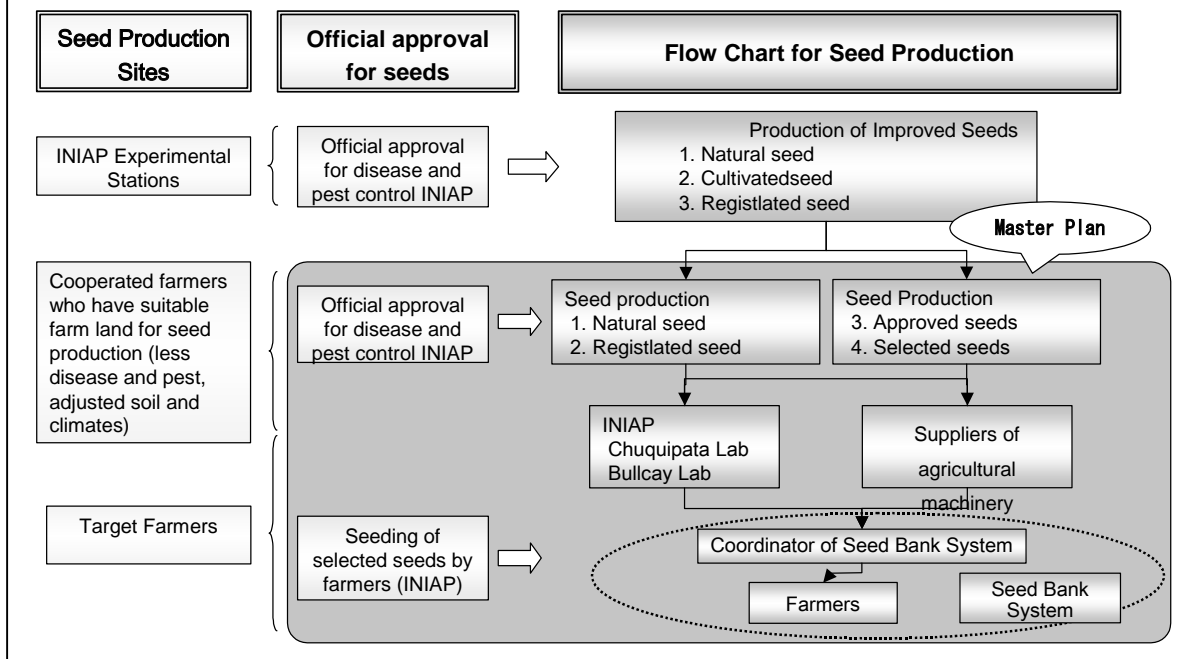


Figure Overall Project Formation for Upgrading of Subsistence-oriented Agro-products

b. Establishment of seed bank

Seed bank shall be operated with participation of beneficiary farmers' group, coordinating agency for establishment of seed bank, public supporting institutions to farmers and sales agency of farm inputs. General feature of seed bank is as illustrated hereinafter. And, the detailed function of the seed bank is as described below.

Seed bank shall be established at each canton, followed by distribution of appropriate seeds and relevant technical assistance. Seed bank shall provide first beneficiaries with the varieties recommended by INIAP, store the varieties returned by the said first beneficiaries after inspection, and distribute subsequent candidate beneficiaries. Making use of agricultural credit system, seed banks shall procure fertilizers, agricultural chemicals and agricultural machinery for lent to benefitable rural organizations.

- 1) Under seed bank system, the coordinating agency of seed bank system shall undertake to borrow the fund in a lump which is required by each farmer for borrowing tractor, purchase of fertilizers/agricultural chemicals, materials for construction of storage of seeds, agricultural machinery, etc. from the fund management agency of micro-credit, and lend this fund to each farmer. Seeds shall be lent directly to each farmer.
- 2) The seed bank shall purchase seeds for lent from INIAP or from seeds producing farmers.
- 3) In response to request from the coordinating agency of seed bank center, INIAP shall select crops and varieties eligible for respective benefitable area and shall take charge of provision of technical assistance on cultivation of these crops and varieties, advice on selection of seeds to be used subsequently, advice on marketing of surplus products and sale at markets.
- 4) Pursuant to request of the coordinating agency of seed bank, INIAP and CREA shall distribute farm inputs to farmers in accordance with cropping time.
- 5) Farmers shall select seeds to be distributed subsequently among harvests, to distribute necessary amount of harvests for self-sufficiency of participatory farmers, and then shall forward surplus

harvests at markets or at periodical fairs following advice of institutional supporting agencies.

- 6) Farmer's association shall decide the use of income stemmed from sale of surplus harvest with participation of participatory farmers, such as construction of necessary facilities of rural organization, repayment of loan, distribution among farmers, etc.
- 7) Farmers are required to return seeds, an amount equivalent to 130% of the borrowed amount, after selecting among harvests for seed. Repayment method of farm inputs (in cash or in harvests with value equal to borrowed inputs), on the other hand, shall be decided after making an agreement between the coordinating agency and participatory farmers. In case the said repayment is made by the same farm inputs and seeds, the same shall be sold to benefitable farmers of subsequent year
- 8) The coordinating agency of seed bank shall repay borrowed fund with interest within 5 years to the fund management agency of micro-credit.
- 9) The seed bank shall be operated by the benefited farmers' organization, the coordinating agency of seed bank, the supporting agencies and the store of agricultural material.
- 10) In the agreement, which is concluded between the farmer and the farmers' organization, the penalty clause applied when the farmer has no capability of repayment, shall be stipulated.

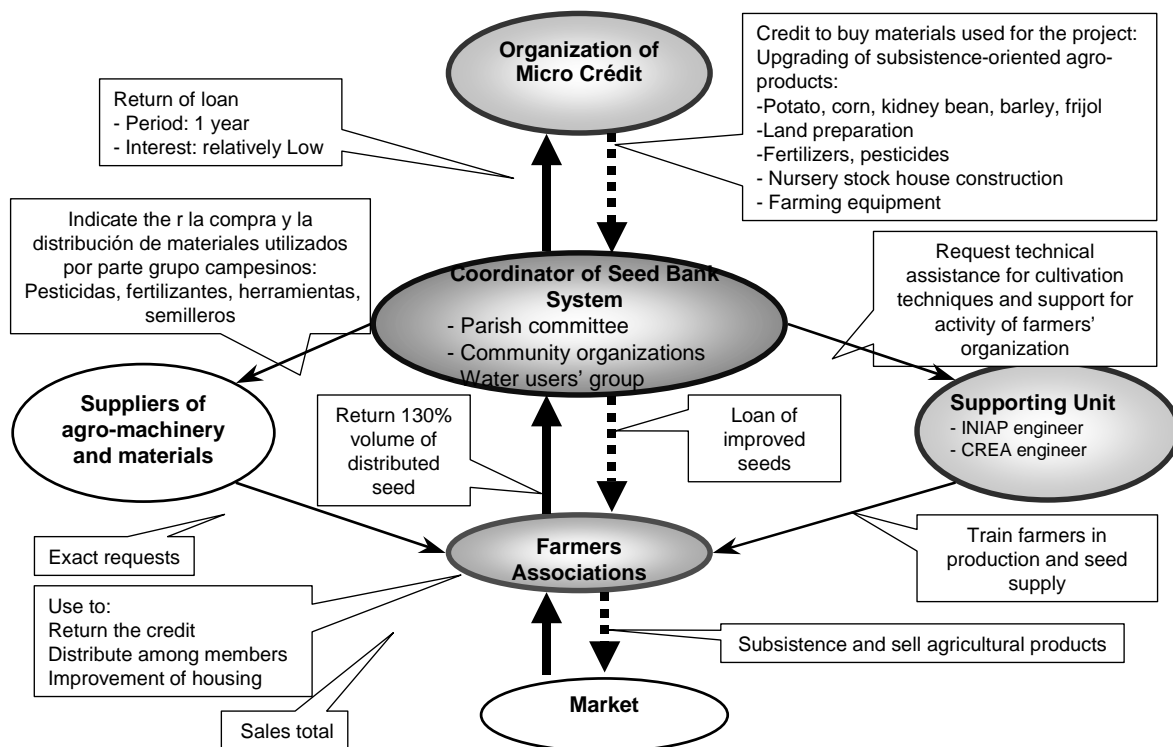


Figure: Seed Bank System Using Micro Credits

c. Agricultural production using seeds to be lent and return of seeds

Farmers' organization shall develop productive activity depending on farm inputs to be borrowed from the seed bank. In principal, productive activity shall be conducted at cooperative farms, and crop cultivation shall be carried out at farms of each farmer after receiving technical assistance and seeds. Productive activity at cooperative farm shall be developed in pursuance to the following goals:

1. Procurement of improved seeds for distribution to each farmer
2. Learning of cropping technology in group

3. Empowerment of regional leaders and raising of awareness of local people
4. Raising awareness of beneficiaries
5. Implanting obligation for repayment and responsibility in group activities

Farm inputs are mainly composed of improved seeds, fertilizers and agricultural chemicals. These farm inputs shall be lent from the seed bank: seeds shall be provided in goods and shall be returned also in goods after harvest, meanwhile as for fertilizer and agricultural chemicals, deficient proportion of the fund after arrangement of farmers by themselves shall be lent and this loan shall be repaid in cash after harvest.

d. Extension services to participatory farmers

Targeting farmers who are not acquainted with basic knowledge and cropping technologies such as on fertilization and pest control, first of all, technical staff of INIAP and CREA shall render technical advisory services to farmers relevant to adequate cropping technologies leading to improvement in productivity and consistent production, organization of farmers together with related activities, and forwarding of surplus harvest at market and periodical fairs. Subsequently, under guidance of INIAP and CREA, the farmers who have received the technical advisory services mentioned before shall undertake to render the same technical advisory services to farmers in surrounding areas. Owing to provision of technical assistance services, highly self-reliant and progressive-minded, regional agricultural production activity may result in sustainable one.

e. Financing Plan

The necessary fund for the project shall be procured from the management agency of micro-credit for the establishment of the seed bank. Details of the bank are described in “b. Establishment of seed bank”. The coordinating agency of seed bank shall repay the fund in a lump sum to the financing institution of micro-credit after five years, and shall expand the project depending on the fund to be gained as operational benefit of micro-credit.

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below. Prior to implementation of the project, proposed beneficiaries are required to make some arrangements by themselves, which is a pre-condition for setout of the project. Besides, both beneficiaries and public supporting organizations shall be charged some inputs in the course of project implementation.

Table: Responsibilities and Activities between Beneficiaries and Public Supporting Organizations

Responsible Entity	Preparation for Implementation	Activities during Project Implementation		Inputs
Beneficiaries	<ul style="list-style-type: none"> • Consensus on participation in the project • Formation of farmers' organization • Preparation of joint farm 	<u>Farm</u> <ul style="list-style-type: none"> ◆ Preparation of productive farm ◆ Procurement of seeds ◆ Procurement of fertilizers and agricultural chemicals ◆ Cultivation ◆ Harvest ◆ Return of seeds ◆ Repayment of loan 	<u>Seed bank</u> <ul style="list-style-type: none"> ◆ Installation of seeds production farm ◆ Procurement of seeds ◆ Procurement of fertilizers and agricultural chemicals ◆ Production of seeds ◆ Harvest and selection of seeds ◆ Storage of seeds ◆ Repayment of loan 	Fund, inputs, manpower, labor force
Public Sector		<ul style="list-style-type: none"> ◆ Extension of cropping technologies ◆ Lent of farm inputs ◆ Loan service 		Loan of necessary fund, personnel relevant to technical assistance

6.3.1.2 Project: Raising Farmer' Income

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

Farmers living far from major consumption centers without to have been provided technical assistance services by the public sector are engaged in production of subsistence-oriented crops depending on traditional farming system. These farmers have not been in a position to produce/sell cash crops due to elevated transportation cost of products and in an absence of proper marketing channel. With regard to farming activities, local people are anxious for reform of awareness on improvement of agriculture sector, upgrading agricultural production technologies, adequate use of farm inputs (seeds, fertilizers and breeding small animals) and reinforcement of institutional supporting services.

Raising farmer's income owing to enhancement in productivity, it is prerequisite to realize measures anticipated by farmers, which, in turn, shall contribute to improvement of farming activity of benefitable farmers, upgrading of diet of farm household, rise in farm income and capacity building of beneficiaries for sustainable development of farming activity.

(2) Beneficiaries and Target Areas

Eligible areas for the project shall be marginal areas represented by small and marginal farmers who suffer from low farm productivity but are willing to renovate their prevailing farming practice. And, priority for selection of target area shall be given to the areas where marketing of agro-produced has not been realized to date. The enterprise envisaged in this project is raising of small animals (*cuy*, goat, etc.) in combination with cultivation of cash crop and vegetables. Small animals are source of protein for local people and are highly marketable.

(3) Profile of the Project

The operation of this project shall be entrusted to farmers' organizations, subject to provision of supporting services by INIAP and CREA. Farmers' organizations shall prepare detailed implementation program. INIAP shall be responsible for supply of improved breed of *cuy*, specific small animal in the Andean Region, and provision of technical assistance to farmers, meanwhile CREA shall undertake provision of extension services and rendering technical assistance on operation of the project. INIAP's supporting services shall cover establishment *cuy* raising center at its experimental farms and production of improves species of *cuy* to be distributed to farmers. On the other hand, CREA's supports consist of operation of farmers' organization and formation of a system for receiving improved breed of *cuy*s through micro-credit system and for lending farmer farm inputs to be used for rearing *cuy*s by the part of farmers' organizations. Proposed beneficiaries shall embark on breeding of improved *cuy*s to be distributed and to return them to farmers' organizations, with technical assistance provided by INIAP and CREA as well as with advisory services on operation of the project given by local governments, universities and NGOs. Farmers' organizations shall undertake an expansion of the project with thus returned *cuy*s.

After the project shall have been expanded, farmers' organizations shall launch production of compound feed and operation of cooperative processing and sales facilities.

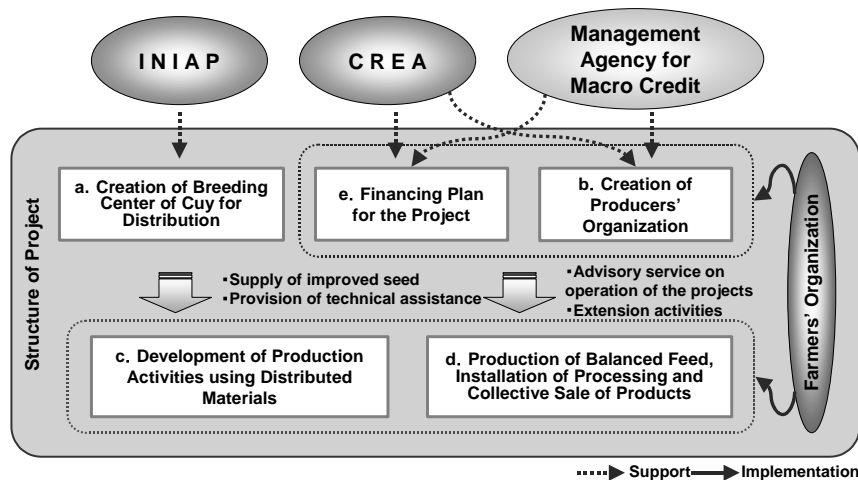


Figure: Overall Project Formation for Raising Farmers Income

Farmers are expected to learn appropriate farming technology required in participation of the project from public supporting agencies. The sub-project composing this project is as described below.

a. Establishment of *cuy* raising center

With a purpose for maintaining quality of *cuy* to be introduced in this project, a *cuy* raising center shall be established with the site of Chuquipata Experimental Farm of INIAP. *Cuys* to be produced and raised at this center shall be distributed to new participatory groups. This center shall be equipped with the following facilities and shall render extension services concerning raising of *cuys* to new participatory groups.

- Pen for raising *cuys*
- Pasture cultivation farm (about 2 ha) with irrigation system
- Agricultural machinery
- Extension center (with lodging facilities)

b. Establishment of farmers' associations union

Subject to support of local government at each canton, farmers' association union shall be established at cantons which are willing to embark this project. This union shall act as a coordinating agency in relation with every aspect of this project such as reception of breeding *cuys*, borrowing and management of fund to be lent to the members of the union, procurement of farm inputs, rental of agricultural machinery and processing and marketing of products. Under the jurisdiction of the union, a couple of farmers' association shall be established. Scope of services of the union are as follows:

- Quality control of products (*cuys* and tree tomato)
- Distribution of breeding *cuys*
- Procurement of farm inputs
- Borrowing of investment fund and lending and management of this fund
- Coordination for consultation on technical matters and planning and coordination of technical assistance program
- Production of compound feed
- Processing and marketing of products (*cuys*)

c. Development of production activity depending farm inputs to be distributed

The activity shall be carried out by farmers' organization and about 90 farmers are expected to affiliate this organization per unit at the first setout of the project, benefitable farmers shall be 30 farmers per

organization who shall be entitled to receive technical assistance from supporting agencies during one year, and thus benefited farmers shall undertake to distribute breeding *cuys* produced at their farms to subsequently benefitable 60 farmers together with rendering technical assistance on raising *cuys* by farmers themselves. At the initial stage of the project, the project shall be developed based on the *cuys* to be raised at the Center.

For smooth expansion of the fruits of the project, benefitable farmers are obliged to return farm inputs to be lent and to distribute them to other farmers and to disseminate by themselves knowledge and technologies to be instructed by supporting agencies to other farmers in the course of development of the project. The following targets are envisaged in this project.

- Empowerment of regional leaders through group development method for faculties of farmers
- Creation of confidence between supporting agencies and beneficiaries
- Agricultural development with least investment
- Capacity building of beneficiaries by themselves for sustainable development
- Enhancement of farmers diet
- Upgrading of farm economy
- Reinforcement of institutional supporting services

d. Production of feed and joint operation of processing and marketing facilities

Feed for animal shall be produced by farmers making use of corn harvested at their farms. And, as production of *cuys* expands in certain degree, joint-operated processing and marketing facilities of *cuys* shall be installed.

e. Financing plan

Proposed beneficiaries shall procure necessary fund through micro-credit system for receiving improved *cuys* and farm inputs from INIAP through farmers' organizations. These farmers shall be obliged to return *cuys* twice as many as the heads to be supplied to farmers organizations in two years and to repay borrowed fund for procurement of farm inputs at an interest rate of 10% per annum in one year.

From the third year on, farmers' organizations shall repay project fund to the financing institution in charge of operation of micro-credit and after the third year shall expand the project depending on the fund to be gained as operational benefit of micro-credit. On the other hand, INIAP shall be responsible for supply of improved *cuys* at the commencement of the project and the cost for procurement of construction machinery to be used jointly and technical assistance services shall be charged to the public sector.

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below. Prior to implementation of the project, proposed beneficiaries are required to make some arrangements by themselves, which is a pre-condition for setout of the project. Besides, both beneficiaries and public supporting organizations shall be charged some inputs in the course of project implementation.

Table: Responsibilities and Activities between Beneficiaries and Public Supporting Organizations

Responsible Entity	Preparation for Implementation	Activities during Project Implementation	Inputs
Beneficiaries	<ul style="list-style-type: none"> • Consensus on participation in the project • Formation of farmers' organization 	<ul style="list-style-type: none"> ◆ Preparation of farm for feed and production of feed ◆ Purchase of parent <i>cuy</i>s ◆ Rearing of <i>cuy</i>s and breeding ◆ Forwarding ◆ Repayment of loan 	Fund, inputs, manpower, labor force
Public Sector		<ul style="list-style-type: none"> ◆ Extension of cropping technologies ◆ Lent of farm inputs ◆ Loan service 	Loan of necessary fund, personnel relevant to technical assistance

6.3.1.3 Project: Improvement of Milk Productivity among Marginal Cattle Farmers

(1) Actual Situation of Target Area and Rationale for implementation of the project

Livestock farming practice in the Study Area is represented by grazing with solo purpose of dairy production and farmers raises 3 – 6 heads of cattle, work oxen heifers/steers, etc. on average. Native species dominate in species of cattle and productivity of these species is depressed; cattle are tethered to posts with a rope of about 5 m and are forced to shift day by day and pasture for feeding are traditional one that have shorter growth period being influenced heavily by the length of rainfall period. Under the circumstances milk production is about 3 liters/head, with a milking period of 6-7 months. Due to the fact that marginal productivity of native cattle raised under the similar circumstances as the Study Area can reach 12 liter/head with a milking period of 9 – 10 months, there remains rooms for improvement of productivity in dairy cattle farming of the Study Area.

On the other hand, sanitary control of cattle is under-developed; sanitary control has been hardly realized until obligatory vaccination was legalized in 2003. And, sanitary control technology becomes less accessible as a site is located far from urban area and farmers are likely to be indifferent on sanitary control of cattle in rural areas.

It is estimated that the productivity of livestock farmers in the Study Area may be raised twice as high as the prevailing level, subject to conducting proper management of feed (proper management of existing pasture or introduction of improved varieties) and employment of more adequate grazing method. In sum, in order to raise productivity of dairy cattle it is prerequisite to introduce compound feed, improved varieties of pasture and adequate management of grazing method like installation of fences equipped with electric wire. Thus improved productive circumstance together with introduction of hybrid species may enable livestock farmers of the Study Area to attain a productivity of 20 liters per head of cattle.

(2) Beneficiaries and Target Areas

Eligible target area shall be those located in mountainous zone where suitable lands for crop production are limited and farmers depend on self-sufficient-oriented crop production and small-scaled cattle farming. Proposed beneficiaries, on the other hand, shall be small and marginal farmers within the said area who engage in agricultural and livestock farming oriented to domestic market.

(3) Profile of the Project

The operation of this project shall be entrusted to farmers' organizations, subject to provision of supporting services by INIAP and CREA. Farmers' organizations shall prepare detailed implementation program. CREA shall be responsible for provision of technical assistance on cattle farming for improvement of milk productivity, extension services and advisory service on operation of the project. CREA in collaboration with INIAP, local governments, universities and NGOs shall also render assistance services on establishment and functional strengthening of farmers' organizations and

financial institution for micro-credit. Farmers' organizations shall embark on introduction of improved varieties of pasture and shall procure farm inputs owing to provision of micro-credit and proposed beneficiaries can afford improvement in productivity of milk, which shall enable farmers to repay loan through micro-credit.

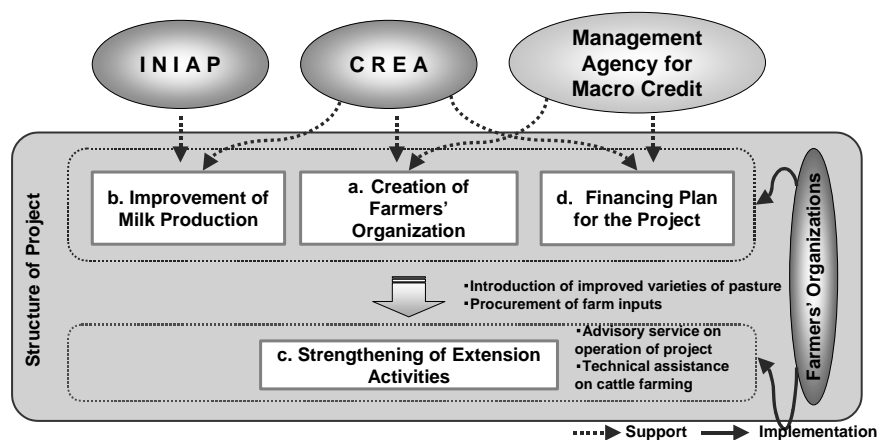


Figure: Overall Project Formation for Improvement of Milk Productivity among Marginal Cattle Farmers

Important components composing the project are as follows:

a. Capacity building of farmers' organization

The project shall be put into implementation with participation of farmers' organization, either existing organizations or newly established organization for the project. At the first setout of the project, benefitable farmers shall be limited to 15 – 20 farmers per one unit of organization, to which public supporting agencies shall render technical assistance on farming technologies closely related with this project and capacity building of organization. In view of smooth and effective implementation of activities of organization and farmers, technical assistance and expansion of the project, leading farmer(s) in charge of cattle farming technologies contributing to an increase in milk production shall be nominated, and the project shall be developed in group headed by this leader farmer in collaboration with other farmers.

In a more concrete manner, public supporting organizations shall supply inputs and carry out the projects to model farmers in advance, and shall proceed with input and transfer of technologies to surrounding farmers in collaboration with the said model farmers.

b. Improvement of milk production

CREA is at present in charge of research and investigation on improved varieties of pasture, improvement of cattle farming method, etc at its experimental farms. In this project, CREA with such accumulated technologies shall render technical assistance services and advisory services on strengthening of farmers' organizations. The following activities are envisaged in this project.

- Introduction of improved varieties of pasture (Selection of benefitable area: location and surface area, study on improved varieties, plowing land, sowing, fertilization, growth control by mowing, additional sowing and additional fertilization)
- Administration of feed (Pasture: improved varieties and traditional varieties, control and ensilage of pasture)
- Management of grazing practice (Rotational grazing, installation of fence equipped with electric wire and control of feeding amount)
- Sanitary control of cattle (Measures against disease and sanitary control in milking process)

c. Reinforcement of extension services

In this project, a leader farmers shall be nominated who shall play a role like model farm in development of various farming technologies. To be more concrete, with participation of benefitable farmers, priority in input and implementation of the project shall be given to the leader farmer, which shall facilitate input and technology transfer of the project more smoothly owing to collaboration of the leader farmer with public supporting agencies. Extension services of the public supporting agencies, which cover cattle farming technologies and capacity building of organization, shall be rendered to whole beneficiaries through on-the-job training method and at lecture classes and to independent farmer by means of direct transfer of technologies at his farm.

- Improvement of cattle farming technologies
 - Management of grazing land (Introduction and operation/maintenance of improved varieties of pasture: intensive grazing land and management of existing varieties of pasture)
 - Management of grazing practice (Rotational grazing, installation of fence equipped with electric wire and control of feeding amount)
 - Administration of feed (ensilage of pasture)
 - Sanitary control of cattle (Measures against disease and sanitary control in milking process)
 - Soil conservation works (Reforestation and installation of simple structure)
- Support for capacity building of farmers' organization (General support relevant to farmers' organization)

d. Financing plan

Proposed beneficiaries through farmers' organization shall procure necessary fund for implementation of the project depending on micro-credit system, to enable them to get seeds for improved varieties of pasture, fertilizers and materials/equipment for maintenance of pasture and for sanitary control. These beneficiaries are obliged to repay this loan after one year to farmers' organizations, which, in turn, shall repay relevant fund to the financing institution of micro-credit from fifth year of the project on.

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below.

Table: Content of the Activities during the Project and Inputs

Responsible Entity	Preparation for Implementation	Activities during Project Implementation		Inputs
Beneficiaries	<ul style="list-style-type: none"> • Consensus on participation in the project • Formation of farmers' organization 	<u>Improvement of pasture</u> <ul style="list-style-type: none"> ◆ Preparation of productive farm ◆ Procurement of seeds and fertilizers ◆ Sowing and fertilization ◆ Procurement of equipment for maintenance of pasture ◆ Cultivation control ◆ Return of seeds and fertilizers ◆ Repayment of loan 	<u>Improvement of cattle farming technology</u> <ul style="list-style-type: none"> ◆ Management for cattle raising ◆ Introduction of measures against soil erosion ◆ Procurement of materials equipment for sanitary control of cattle ◆ Sanitary control of cattle ◆ Return of materials and equipment ◆ Repayment of loan 	Fund, inputs, manpower, labor force
Public Sector		<ul style="list-style-type: none"> ◆ Extension of cropping technologies ◆ Extension of cattle farming technology ◆ Lent of farm inputs ◆ Loan service 		Loan of necessary fund, personnel relevant to technical assistance

6.3.1.4 Project: Support to Cash Crops Production

(1) Actual Situation of Target Area and Rationale for Implementation of Project

Besides vegetables and grains which are considered as self-sufficient-oriented crops for farmers, fruits, root vegetables and vegetables are cultivated under climatological condition of specific Andean Region and with use of traditional varieties. These crops are highly marketable as cash crops both at markets located outside the region and at overseas markets, and thus constitute an important source of income in cash.

As Andean fruits, *babaco*, tree tomato and blackberry are widely cultivated throughout the Study Area. Nevertheless, due to inflow of the same fruits with depressed price from Colombia and Peru, they should be raised competitiveness with lowering their price and enhancing their quality. On the other hand, farmers depending on fruits production in the Study Area are likely to earn high income and to show higher interest in expansion of their actual business, but technical and financial constraints have frustrated willingness of these farmers; an absence of adequate technologies transfer and deficient provision of agricultural credit have prevented farmers from rational use of the physical potentials which they are endowed with.

(2) Beneficiaries and Target Areas

The target area of this project shall be the area in which production of highly marketable Andean crops prevails. Proposed beneficiaries of this project shall be the farmers within the Study Area who are actually engaged in production of cash crops or who are anxious for cultivation of cash crops. These proposed beneficiaries shall be affiliated to a group of producers which is expected to receive technical assistance from CREA and INIAP.

The scope of services envisaged in this project shall be limited to the prevailing technical assistance services to have been actually provided by CREA and INIAP

(3) Profile of the project

The operation of this project shall be entrusted to producer's organizations, subject to provision of supporting services by INIAP and CREA. Producer's organizations shall prepare detailed implementation program. INIAP shall be responsible for provision of technical assistance on cultivation of fruits and vegetables, specific products in the Andean Region, to farmers, meanwhile CREA shall undertake provision of extension services and rendering technical assistance on operation of the project. INIAP's supporting services shall cover rendering technical assistance on cultivation of Andean fruits and vegetables to farmers' organizations and farmers. On the other hand, CREA's supports consist of operation of farmers' organization and formation of a system for joint procurement of farm inputs with use of fund to borrow through micro-credit system and to lend farmers these farm inputs. Proposed beneficiaries shall embark on production of cash crops with use of distributed farm inputs and to repay loan amount. In case that beneficiaries intend to launch large-scales production of cash crops, they should apply loan for private financing institutions.

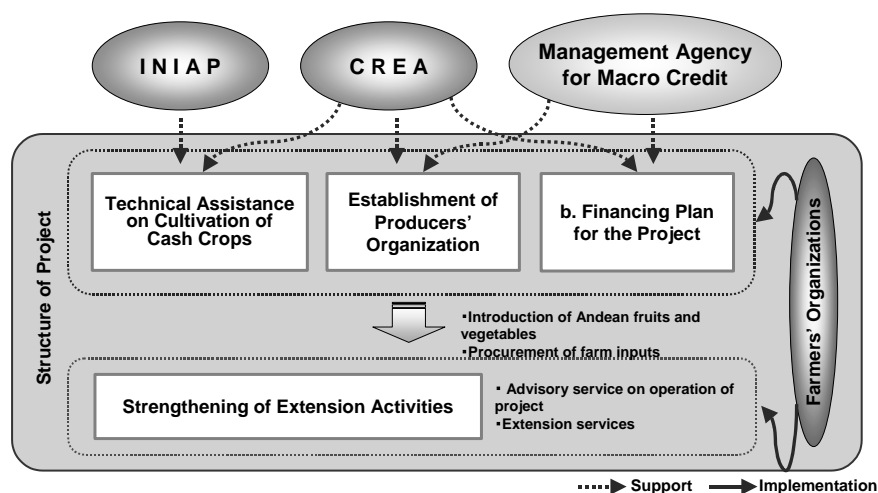


Figure: Overall Project Formation for Improvement of Milk Productivity among Marginal Cattle Farmers

Focal factors composing this project are as described hereinafter.

a. Reinforcement of extension service

To reinforce technical assistance services to be undertaken by staff of CREA, INIAP, municipal government office, etc and technical assistance relevant to Andean fruits and vegetables shall cover, but not limited to,:

- Control of diseases
- Fertilization management
- Harvest
- Cultivation facilities
- Joint Collection and forwarding of harvests

Public supporting services to cultivation of cash crops shall be provided to farmers in the Study Area by responsible staff of CREA and INIAP for technical assistance and these services deem to be charged to beneficiaries in principle due to the fact that proposed beneficiaries of the said services are expected to raise their farm income. Nevertheless, the outcome of the pilot project gives a suggestion that the public supporting services on cash crops cultivation envisaged in the present Master Plan should be started at first as a grant aid project of the public supporting services and should be transferred gradually to onerous one.

b. Financing plan

Proposed beneficiaries through farmers' organization shall procure necessary fund for implementation of the project depending on micro-credit system, to enable them to procure equipment and construct personal farm facilities required for receiving technical assistance and extension services These beneficiaries are obliged to repay this loan after one year to farmers' organizations, which, in turn, shall repay relevant fund to the financing institution of micro-credit from fifth year of the project on. In case that beneficiaries intend to launch large-scales production of cash crops, they should apply loan for private financing institutions

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below.

Table: Content of Activities during the Project and Inputs

Responsible Entity	Preparation for Implementation	Activities during Project Implementation	Inputs
Beneficiaries	<ul style="list-style-type: none"> • Consensus on participation in the project • Formation of farmers' organization 	<ul style="list-style-type: none"> ◆ Procurement of materials and equipment for farm facilities ◆ Extension of cultivation technology ◆ Cultivation and harvest ◆ Forwarding and sales ◆ Repayment of loan 	Fund, inputs, manpower, labor force
Public Sector		<ul style="list-style-type: none"> ◆ Extension of cropping technologies ◆ Loan service 	Loan of necessary fund, personnel relevant to technical assistance

6.3.1.5 Project: Improvement for Marketing of Dairy Products

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

In the provinces of Azuay and Los campesinos beneficiarios recibirán micro créditos a través de la organización campesina. Los campesinos utilizarán los créditos para la construcción del local y la instalación de los Cañar, as a consequence of the decline in agricultural labor force attributable to accelerated emigration of male population in seek of job opportunities as migrant, leading farm activity has been shifted from crop production to livestock farming which entails lower manpower. Under the circumstances, an encouragement of dairy production and industry shall constitute inevitable agenda for development of the region. Prevailing constraints on the area where livestock farming activity dominates are: under-development of marketing channel among small and marginal livestock farmers, heavy dependence of collection and forwarding of products on middlemen, immature farming technology of cattle and low income stemmed from sale of milk caused by deficient labor force due to emigration of male population.

Aiming at poverty reduction and encouragement of productive activity targeting small and marginal farmers in the Sierra Belt Region, elevating income and securing constant income of small and marginal dairy cattle farmers attributable to an improvement of productivity and expansion of output in dairy production are set as high priority development purpose of the present Master Plan. Nevertheless, anticipated increase in income of farmers can not be attained owing to solo effort for increase in productivity and expansion in output of dairy production but as a consequence of combined effort of these goals with securing of marketing destination; an increase in productivity shall lead to getting consistent source of income and securing of marketing destination shall bring about an elevated income. Farmers who engage in dairy farming producing a certain amount of output thanks to relatively consistent level of productivity are not in a position to getting enough income due to lack of cooperative system for collection and forwarding of products. Therefore, establishment of adequate marketing channel in addition to attaining consistent production is indispensable for dairy cattle farmers in the region. It is expected that sale of products with more advantageous price may be realized, if quality of products should be upgraded thanks to quality control requisite envisaged in cooperative collection and forwarding system.

In case of the former, farmers are less accessible to market information because products are forwarded where they are produced and the right decision of price falls on hand of middlemen, meanwhile in the case of the latter, consistent demand together with strict quality control is guaranteed by purchasing agencies and dairy farmers endowed with relatively advantageous condition like access to market and production of regular amount are source of supply for this channel. If small and marginal farmers wish to participate in the latter marketing channel, they should be affiliated to an organization of producers for establishment of collection and forwarding facilities and attain consistent production and a certain standard of quality.

(2) Beneficiaries and Target Areas

Proposed target areas for this project shall be the areas where marketing infrastructure is

under-developed at present and small and marginal farmers depending their trade of milk on middlemen are concentrated. It is desirable that proposed beneficiaries have an experience in being affiliated to an organization of producers because forming an organization for facilitating collection and forwarding of milk is envisaged in this project.

(3) Profile of the Project

The operation of this project shall be entrusted to associations for collection and forwarding of dairy products, subject to provision of supporting services by INIAP and CREA. Association for collection and forwarding of dairy products shall prepare detailed implementation program. CREA shall be responsible for provision of technical assistance on establishment of association, introduction of cooling and preservation tank of milk, operation and maintenance of association, etc.. CREA in collaboration with INIAP, local governments, universities and NGOs shall also render assistance services on improvement of marketing channel, extension of the project and project management.. The association shall procure necessary fund for this enterprise from private financing institutions, subject to repayment of loan amount.

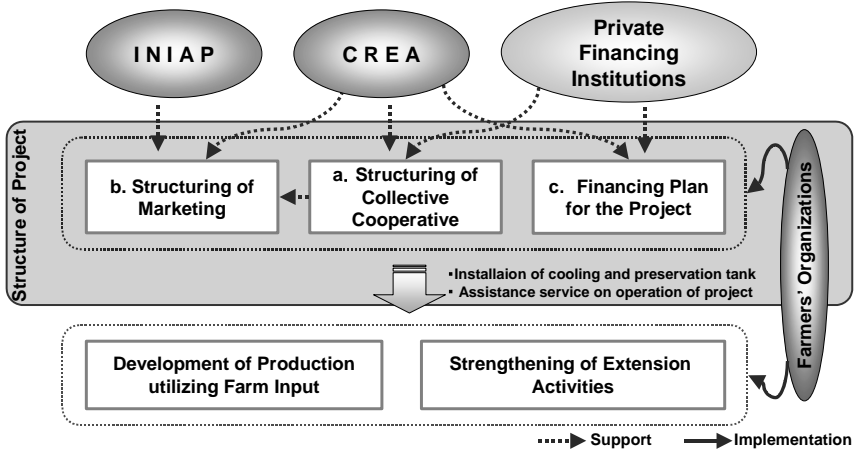


Figure: Overall Project Formation for Improvement for Marketing of Dairy Products

Focal factors composing this project are as explained below:

a. Capacity building of association for collection and forwarding of dairy products

In this project, an association for collection and forwarding of dairy products shall be organized and eligible cattle farmers to be benefited shall be decided. At the initial stage, in view of smooth implementation of the project within target area, the number of the beneficiaries shall be limited to 20-30 cattle farmers; later on when strengthening of the association and marketing system shall have been consolidated, the number of the beneficiaries is to be increased to about 100 cattle farmers.

Because strengthening of the association in charge of marketing of milk constitute an essential factor for the success of the project, public supporting agencies shall undertake provision of technical assistance relevant to this capacity building. In this regard, responsible persons who render technical assistance services to the association shall be nominated, and capacity building/empowerment of these persons shall be conducted in line with the progress of the project. Transfer of technologies targeting to beneficiaries shall be undertaken by the association under guidance of public supporting organizations taking into account of comprehension level of farmers, scope of training items, problems relevant to implementation of the project together with measures for solving these problems.

Table: Scope of Technical Assistance by Activity

Activities	Scope of Technical Assistance
Management of low temperature cooling and preservation tank	<ul style="list-style-type: none"> • Tank operation management • Recording & filing • Quality control
Marketing system	<ul style="list-style-type: none"> • Collection of market information within the region • Collection planning (Transportation from producers to facility, forwarding volume, quality control) • Forwarding planning (price, supply system) • Promotion for sales (Public relations, Advertisement)
Cattle farming technology	<ul style="list-style-type: none"> • Management in cattle farming • Introduction of measures against soil erosion • Sanitary control of cattle
Finance	<ul style="list-style-type: none"> • Financial affairs and auditing (Loan and repayment planning) • Management on repayment

b. Improvement of marketing channel

This project aims at elevating farm-gate price of milk and improvement of marketing channel to dairy products processing agencies, by means of upgrading quality and increasing output of milk attributable to introduction of low temperature cooling and preservation tank and employment of cooperative collection and forwarding system.

Proposed activities of the association and public supporting organizations are as listed below.

- Collection of information on marketing of milk within the region (Farmers, consumers, marketing, processing of dairy products and supply and demand)
- Consistent supply of milk for marketing and quality control of milk (Technical assistance on dairy cattle farming , sanitary control in milking process: to follow fruits of technical assistance services envisaged in the project for increase in milk production among small and marginal farmers)
- Structuring of collection system of milk (Structuring of collection and forwarding system of milk, introduction of refrigerating tank, establishment of transportation network between producers and organization, recording method for reception of milk and decision on reception amount of milk)
- Promotion for markets and determination of destination markets
- Structuring of forwarding system (Transportation method to destination, recording for reception of milk, payment method)

c. Financing plan

The association shall procure necessary fund for the project through private financial institutions, for consistent supply of their product, upgrading of quality and introduction of low temperature cooling and preservation tank of milk (office, storage, generator, collection tank, etc), indispensable for consolidation of collection and forwarding of milk. The association shall repay loan amount financing institutions to entrepreneurs after fourth year of the commencement of the project.

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below.

Table: Content of Activities during Project and Inputs

Responsible Entity	Preparation for Implementation	Activities during Project Implementation		Inputs
Beneficiaries	<ul style="list-style-type: none"> - Consensus on participation in the project - Formation of farmers' organization 	<u>Introduction of Facilities</u> <ul style="list-style-type: none"> ◆ Preparation for introduction of low temperature cooling and preservation tank (Acquisition of land, structuring operation system) ◆ Procurement of low temperature cooling and preservation tank ◆ Transfer of technology for operation of tank ◆ Structuring milk collection system ◆ Distribution of profit among association members ◆ Repayment of loan for low temperature cooling and preservation tank ◆ Repayment of loan 	<u>Improvement of cattle farming technology</u> <ul style="list-style-type: none"> ◆ Management for cattle raising ◆ Introduction of measures against soil erosion ◆ Procurement of materials equipment for sanitary control of cattle ◆ Sanitary control of cattle ◆ Return of materials and equipment ◆ Repayment of loan 	Fund, inputs, manpower, labor force
Public Sector		<ul style="list-style-type: none"> ◆ Transfer of technology on operation of tank ◆ Lending of materials and equipment ◆ Support for organizing association and operation and maintenance of tank ◆ Extension of cattle farming technology ◆ Technical assistance on measures against soil erosion 		Loan of necessary fund, personnel relevant to technical assistance

6.3.2 Activation of Non-agricultural Sector

This component, which aims to make rational use of physical potentials of the region, to promote development of locally based industry and to increase new job opportunities, consists of creation and development of agro-industry for processing Andean fruits, vegetables, dairy products, etc. and of handicraft manufacturing. Processing of Andean fruits and vegetables, which are considered as highly potential products of the region for marketing outside the region, is expected to expand marketing destination of these crops and, at the same time, to strengthen competitiveness of the said potential products of the region by raising their value-added. Processing of dairy products, on the other hand, has objectives to raise value-added of milk, leading product of the region, not by marketing of milk as raw material but by processing it to produce cheese, etc., as well as to expand market of dairy products. Encouragement of rural handicraft manufacturing industry shall be proceeded as a means for getting cash income among farmers.

6.3.2.1 Project: Encouragement of Agro-products Processing Industry

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

Small-scaled farmers prevail in the Study Area. These small-scaled farmers have been concentrated their farming activities on production of subsistence-oriented crops, suffering from depressed productivity. These farmers necessitate, nevertheless, cash income for procurement of household goods and are anxious to getting further cash income in addition to their existing ones stemmed from sale of small amount of cash crops.

This project sets as its final goal to foster productive activities of non-agricultural sector within the target area of the present Master Plan, to increase new job opportunities and to raise farm income.

(2) Beneficiaries and Target Areas

The encouragement of agro-industry shall be targeted all destitute farmers and small-scaled enterprises in the Study Area and public supporting agencies like CREA and INIAP (And municipal government offices, if necessary) shall be involved in the project for rendering necessary technical assistant services. In case of the agro-industry program, public financing agencies shall participate because finance-related activities are focal component in this program. Besides, as for the program which calls specific technologies and/or advanced cutting-edge technologies, technical assistance/advice from the part of scholars of district university(ies) and/or engineers of private companies may be required.

(3) Profile of the Project

The operation of this project shall be entrusted to farmers' organizations and entrepreneurs to be selected by CREA, subject to provision of supporting services by CREA and local governments. Referring to the information compiled by local governments represented by municipal offices, CREA shall proceed with identifying eligible entrepreneurs who intend to develop or expand their activities or such entrepreneurs who are eager to embark new business and then shall support these entrepreneurs in view of creating new employment opportunity and revitalization of regional economy. For procurement of necessary fund of the project, farmers' organization and entrepreneurs shall apply private financing institutions for loan under advisory and supporting services of CREA and local governments. Besides, they may expect supports of the public sector in the fields of project operation, marketing of products, etc.

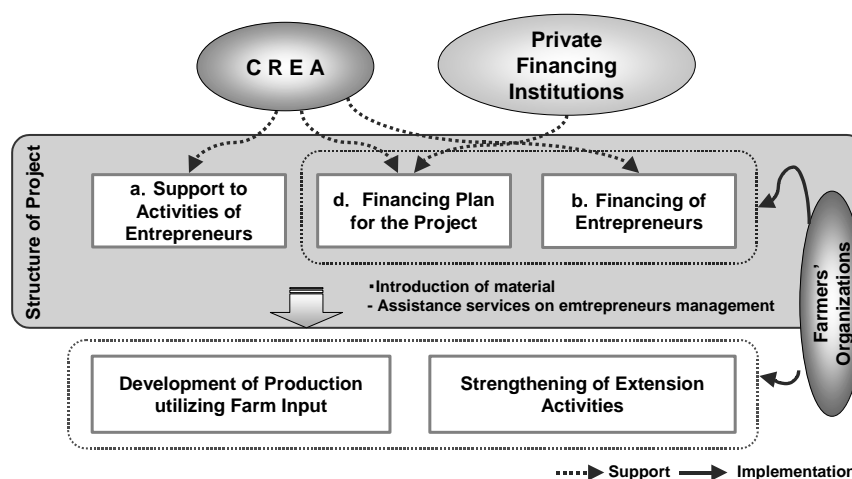


Figure: Overall Project Formation for Encouragement of Agro-products Processing Industry

a. Support to entrepreneurs

The possibility to increase job opportunities attributable to expansion of business activities of small-scaled enterprises engaging in productive activities within the region shall be assessed. At the same time, to be assessed the possibility to recruit entrepreneurs among local inhabitants and to recruit potential farmers' association which are eager to embark on entrepreneur business together with the feasibility of this business.

The decision of eligible projects shall be made subject to evaluation on these projects with regard to their technical and financial feasibility. Although detailed scope of the project still remain undecided, the project shall comprise, among others, support to entrepreneurs, finance to entrepreneurs and technical assistance on operation of the project, in view of that the purposes of agro-products processing industry development consist of: (1) Intensification of economic activities in rural area, (2) Raising of producer's income, (3) Increased job opportunity, and (4) Environmental conservation.

Proposed scope of the project is as mentioned hereinafter.

(Encouragement of agro-industry based on regional agro-products with focus laid on Andean fruits)

- Andean fruits processing project (Already verified at Bulan area)
- Primary processing project of regional agro-products
- Primary processing project of timber

(Support to existing small-scaled enterprises)

- Sales promotion project for processed meat like pork and *cuy*
- Local market improvement project

(Strengthening of production of goods to be consumed locally)

- Production efficiency development project for manufacturing industry of goods to be consumed locally

Eligible project shall be decided taken into consideration of the following viewpoints:

- In advance to proceeding with organization of small and marginal farmers, actual situation should be reviewed because overall plan of the project such as supply of raw materials to processing industry, purchase of products, etc. is already designed.
- Regarding the enterprise depending raw materials on locally available agro-products, encouragement of this enterprise shall contribute to development of local economy in supply of raw materials as well as in processing agro-products including creation of new employment opportunity. In case that suppliers of raw materials also embark on processing industry, this enterprise should be started subject to preparation of concrete production plan and securing of marketing destination due to the fact that farmers without experience are required to acquire new technology and to develop new markets.
- Necessary fund for the project shall be procured on loan and entrepreneurs and farmers' organizations are obliged to repay loan amount without failure, which is a key factor for success of the project. Thus project depending on donated fund without obligation for repayment shall not be in mind.

Participatory approach of beneficiaries at the initial stage for implementation of the project shall encourage them to raise their morale, so eligible project shall be decided among candidate proposals applied by entrepreneurs and farmers' organizations. An outline of the activities shall comprise:

- Strengthening of farmers' organization
- Improvement in quality of products
- Reduction of post-harvest loss
- Capacity building of agricultural enterprises
- Diversification of agro-products
- Propaganda of agro-products by producers
- Promotion for diversification of agro-products

Both CREA and INIAP assist this activity. Therefore, the agro-industry closely linked the with agricultural sector such as processing of dairy products, production of preserves and canned food and simple manufacturing of leather products shall be introduced. Because these processed goods are evaluated by consumers in viewpoints of their quality and marketability, the possibility for introduction of relevant industries shall be subject to marketing conditions and technological level of participants.

On the other hand, introduction of untraditional and easily acceptable handicrafts shall be assessed taking into consideration of regional development potential and marketability.

b. Finance to entrepreneurs

Public supporting agencies shall be responsible for organizational arrangement for implementation of the project and entrepreneurs and farmers' association shall consider the manner of procurement of fund for the implementation of enterprises. The financial support envisaged in this project is on credit basis with a target laid on individual farmers and farmers' association and the necessary fund shall be procured from private banks. Public supporting agencies shall also involve in administration of the fund for credit.

Since the objective of the project is revitalization of production which contributes for the poverty reduction targeting small and marginal farmers, the scale of enterprise shall be small. Loan for large scale enterprise financing from private bank which shall be arranged by the firm itself, shall not be included in the project.

c. Support to operation and management of new business

This project aims to rationalize productive process of small-scaled enterprises by promoting to form an association among them.; to be more concrete, to recommend joint operation of production factory and joint procurement of machinery and equipment, although implementation of cooperative activities like cooperative marketing of products shall be subject to such conditions as potential marketing destination and legal requisite in formation of cooperatives, etc.

d. Financing plan

Proposed beneficiaries represented by entrepreneurs and farmers' organizations shall procure necessary fund for the project through private financial institutions, for introduction of advanced technology and procurement of new machinery equipment and facility required for expansion of existing business. The entrepreneurs and farmers' organizations are obliged to repay loan amount to financing institutions to entrepreneurs according with loan conditions.

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below.

Table: Content of Activities during Project and Inputs

Responsible Entity	Preparation for Implementation	Activities during Project Implementation	Inputs
Beneficiaries	<ul style="list-style-type: none"> • Consensus on participation in the project • Formation of farmers' organization 	<ul style="list-style-type: none"> ◆ Market research ◆ Project planning, decision on procurement of equipment/materials and introduction of relevant technology ◆ Transfer of technologies on processing, sanitary control and management ◆ Processing ◆ Shipment and sale ◆ Repayment of loan 	Fund, inputs, manpower, labor force
Public Sector		<ul style="list-style-type: none"> ◆ Support on market research ◆ Support on project planning ◆ Extension services on processing technology ◆ Extension services of business management ◆ Support on financing 	Loan of necessary fund, personnel relevant to technical assistance

6.3.2.2 Project: Encouragement of Dairy Products Processing Industry

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

The target areas for introduction of dairy products processing industry are the areas in which dairy cattle farming attaining average level of production prevails, although labor force is deficient due to emigration of male population. In this region, cattle farming is major source of income for farm household and 43% of the population engage in cattle farming. Prevailing constraints in relation with cattle farming are:

- Lack of labor force represented by male adult
- Inferior level of cattle farming technologies
- Lack of transportation means to markets
- Under-development of infrastructure for encouragement of production activity

The cattle farmers in the region face difficulty in selling their products in recent years due to inflow of more economical dairy products from neighboring regions. On the basis of existing dairy products processing industry, supports shall be provided to producers’ association already formed aiming at renovation of existing facilities and upgrading in quality of dairy products.

(2) Beneficiaries and Target Areas

Eligible beneficiaries of the project shall be farmers’ associations or enterprises engaging already in processing of dairy products and eligible target areas shall be the areas in which small and marginal dairy cattle farmers exist.

Dairy products in this region are represented by flesh cheese and more value-added dairy products are supplied from other regions.

(3) Profile of the Project

The operation of this project shall be entrusted to farmers’ organizations, subject to provision of supporting services by CREA. CREA’s support shall cover strengthening of existing farmers’ organizations actually engaged in dairy production and cattle farmers, management of the project targeting entrepreneurs, upgrading quality of products, etc. Farmers’ organization shall also expect support on intensification for marketing of dairy products including securing marketing destination from CREA, local governments and NGOs. In addition, for getting loan from private financial institutions, CREA and local governments shall render advisory services to farmers’ organizations.

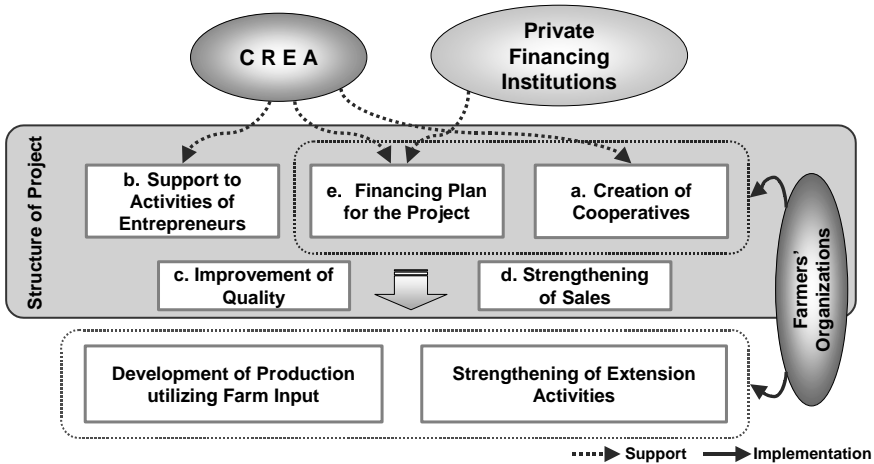


Figure: Overall Project Formation for Encouragement of Dairy Products Processing Industry

Items composing this project are as explained from a. to f. below.

a. Capacity building of farmers' organizations

Farmers' organization shall be established aiming at allowing existing farmers' organization and farmers which engage in the dairy products processing industry in the study area, to receive technical assistance and advisory service on operation conducted by supporting agency. The supporting agency shall be responsible for the capacity building of farmers' organizations consisting of organizing, advisory service or operation, etc.

b. Support to entrepreneurs

With a purpose of securing marketing destination of dairy products in the region, public support services shall be provided to existing dairy products processing entrepreneurs in relation with manufacturing technology of foreseeable dairy products and managerial method of a business.

c. Upgrading in quality of products

After initiating production, upgrading in quality of dairy products aiming at production of high quality products and maintaining of consistent production shall be conducted in such manners as to employ adequate means for sanitary control, to renovate the quality making reference to preference and needs of consumers.

d. Strengthening in marketability

Marketing of products such as development of new markets and establishment of renovated marketing network is a focal factor for association' business. CREA in collaboration with municipal and provincial governments offices shall undertake provision of marketing information and introduction of marketing channel and other supporting services.

e. Financing plan

For embarking on business, farmers' organizations have to seek external source of finance like private banks or other similar financing agencies. In this connection, public supporting agencies shall be responsible for introduction of proposed financing agencies who offer this type of credit and provision of assistance in preparation of application for credit.

Proposed beneficiaries shall procure necessary fund for the project through private financial institutions, for introduction of advanced technology and procurement of new machinery equipment and facility required for expansion of existing business. Farmers' organizations are obliged to repay loan amount to financing institutions to entrepreneurs according with loan conditions.

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below.

Table: Content of Activities during Project and Inputs

Responsible Entity	Preparation for Implementation	Activities during Project Implementation	Inputs
Beneficiaries	<ul style="list-style-type: none"> • Consensus on participation in the project • Formation of farmers' organization 	<ul style="list-style-type: none"> ◆ Market research ◆ Project planning, decision on procurement of equipment/materials and introduction of relevant technology ◆ Transfer of technologies on processing, sanitary control and management ◆ Processing ◆ Shipment and sale ◆ Repayment of loan 	Fund, inputs, manpower, labor force

Public Sector		<ul style="list-style-type: none"> ◆ Support on market research ◆ Support on project planning ◆ Extension services on processing technology ◆ Extension services of business management ◆ Support on financing 	Loan of necessary fund, personnel relevant to technical assistance
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6.3.2.3 Project: Encouragement of Rural Handicrafts Manufacturing Industry

(1) Actual Situation of the Target Area and Rationale for Implementation

By providing supports to exiting enterprises, an encouragement of agro-product processing industry aims to contribute to poverty reduction of the region to be brought about as a consequence of expansion in employment opportunities. Support to rural handicraft industry, meanwhile, envisages to backup existing small-scaled local handicraft industry for improvement of their production efficiency and enhancement of profitability and seeks to give local farmers an opportunity to attain income from side job.

Handicraft of the destitute people of the Study Area covers production of art works, Panama hats – folk handicrafts, ceramics, etc. and income level of these industries is extremely depressed because the majority of profit is on hand of middlemen and export agencies.

The ruins of the Andean Ancient Culture are scattered throughout the Study Area, but most of these ruins have not been maintained properly as tourist attractions. Subject to proper maintenance of these ruins as tourist attractions, there remains rooms for development of handicraft industry represented by manufacturing of folk handicraft. The headquarters of CREA in Cuenca is equipped with training room for manufacturing of handicraft with assignment of training staff and this facility may be utilized for development of tourism resources in parallel with encouragement of handicraft industry.

(2) Beneficiaries and Target Areas

The target area shall fall on rural areas of the Study Area of the Master Plan, subject to accessibility of CREA's technical assistance. Eligible beneficiaries shall be small-scaled rural handicrafts manufacturers and their employees .

The headquarters of CREA is equipped with facilities oriented to manufacturing of such handicrafts as ceramics, leather products, wooden works, dying textiles, metal carving, etc. Proposed target activities are as follows.

(Strengthening of CREA's training services)

- Improvement of training facilities
- Empowerment of training staffers
- Analysis on regional potentials for development of handicraft industry

(Support to small-scaled handicraft industry)

- Provision of credit for expansion of business
- Improvement of marketing condition
- Project for upgrading in quality and expansion in production for traditional local products by means of introduction of renovated technology (Native costume, folk handicrafts, processing of precious metal, etc.)

(Program for support on promotion of traditional culture and customs)

- Renovated production of local products based on traditional culture
- Renovated production of traditional processed foodstuffs
- Improvement of marketing system

(Production of locally consumed products)

- Project for enhancement in production efficiency for production industry of locally consumed products.

(3) Profile of the Project

The operation of this project shall be entrusted to small-scaled handicrafts manufactures and their employees, subject to provision of supporting services by CREA. CREA's supports shall cover promotion for organization of small-scaled handicrafts manufactures and their employees as well as joint procurement of timber for processing and sale of manufactured products through organizations of manufactures. With supports of CREA and local governments, manufactures' association shall procure necessary fund for implementation of the project through micro-credit system.

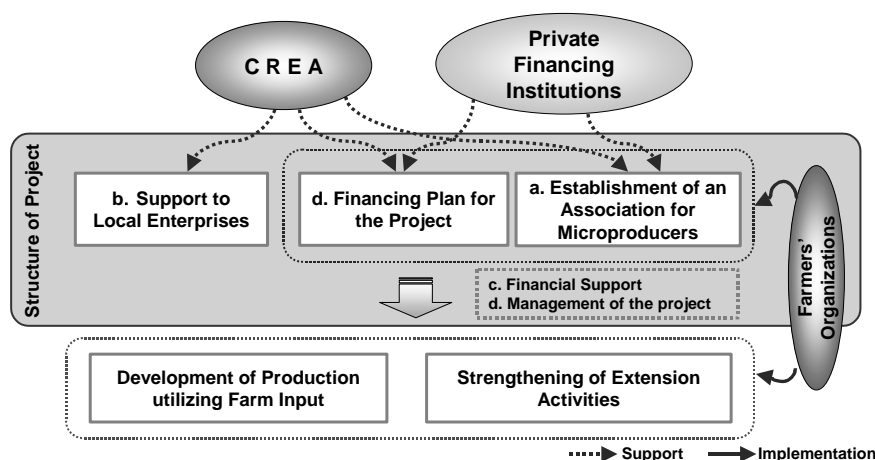


Figure: Overall Project Formation for Encouragement of Rural Handicrafts Manufacturing Industry

Items composing this project are as explained below.

a. Organization of small-scaled manufacturers

Rational operation in manufacturing process shall be promoted by means of organization of small-scaled manufacturers represented by home manufacturers. In concrete, structuring of manufacturing factory and procurement of processing machinery and equipment shall be made jointly. Nevertheless, cooperative activities like joint shipment of products shall be subject to detailed review on social condition such as marketing destinations, application and approval procedure, etc.

b. Support to local industry

Public supporting organizations are required to render assistance services to manufacturing activity contributing to creation of employment opportunity among marginal farmers like manufacturing of folk handicrafts, organization of manufacturers, recruiting of personnel in charge of technical assistance, study on development of business, etc. In this regard, the role of public supporting organizations shall be clarified. CREA is equipped with a training center for regional traditional culture, folk handicrafts manufacturing, specific products of the region and development of regional products manufacturing industry shall be attained with an efficient use of this facility.

c. Support to financing

Micro-credit shall be provided with a target laid on marginal farmers and the use of this micro-credit shall be limited to procurement of raw materials, investment on machinery and facility, operation

cost, etc.

d. Project operation

The operation of the project including planning of improvement measures for marketing and technological aspect as well as renovation of machinery and equipment shall be charged to enterprises of handicraft industry, either farmers' association as entrepreneurs or owners of small-scaled industry. Public supporting agencies, on the other hand, shall involve in evaluation on the feasibility of the project to be implemented within this Master Plan, with reference made to implementation plan drafted by applicant.

Eligible project shall be small-scaled one because proposed beneficiaries shall be represented by marginal farmers.

e. Project's financing plan

Proposed beneficiaries through farmers' organization shall procure necessary fund for implementation of the project depending on micro-credit system, to enable them construction of the space and procurement of supplies for production, receive technology assistance and promote the activities. With these results, the beneficiaries are obliged to repay this loan after one year to the farmers' organizations, which, in turn, shall repay relevant fund to the financing institution of micro-credit from the fifth year of the project on.

(4) Premises for Implementation of the Project

Demarcation in responsibilities and activities between beneficiaries and public supporting organizations is as summarized in the table below.

Table: Content of Activities during Project and Inputs

Responsible Entity	Preparation for Implementation	Activities during Project Implementation	Inputs
Beneficiaries	<ul style="list-style-type: none"> • Consensus on participation in the project • Formation of farmers' organization 	<ul style="list-style-type: none"> ◆ Market research ◆ Project planning, decision on procurement of equipment/materials and introduction of relevant technology ◆ Transfer of technologies on processing, sanitary control and management ◆ Processing ◆ Shipment and sale ◆ Repayment of loan 	Fund, inputs, manpower, labor force
Public Sector		<ul style="list-style-type: none"> ◆ Support on market research ◆ Support on project planning ◆ Extension services on processing technology ◆ Extension services of business management ◆ Support on financing 	Loan of necessary fund, personnel relevant to technical assistance

6.3.3 Improvement of Social and Economic Infrastructure

As for development of social and economic infrastructure, more effective development method is required and participation of rural organizations in development process (*Minga*) should be fostered. At present, regarding with development of social infrastructure (simple waterworks, community centers, rural roads, etc.) participation of beneficiaries is realized, not on initiative of beneficiaries but in response to suggestion of public agencies. Under the circumstances, it is of importance to take a step to foster willingness and awareness of the beneficiaries for their playing focal role in development of infrastructure. In sum, on initiative of the beneficiaries, preparation, implementation, operation and maintenance of the project for development of infrastructure should be proceeded. For implementation of this project it is necessary: (1) To procure construction equipment and machinery, (2) To procure materials for construction and (3) To formulate social and economic infrastructure development project for inducing participation of *Minga*.

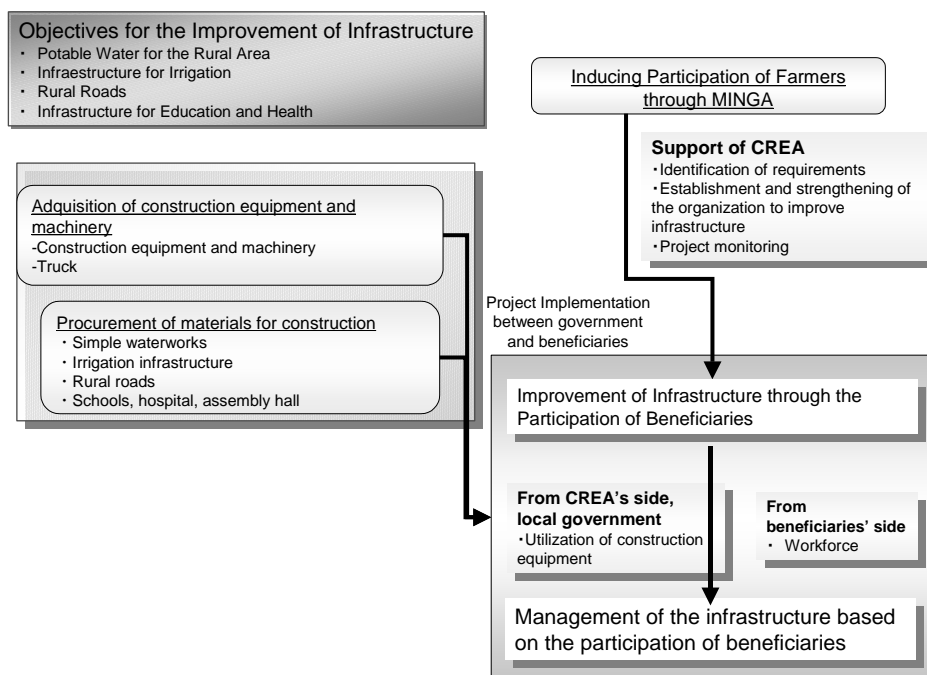


Figure: Activities for Initial Preparation of Project

6.3.3.1 Project: Social and Economic Infrastructure Development

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

Development of infrastructure undertaken by CREA consists of rural roads development (*caminos vecinales*) and irrigation system development and Bureau of Infrastructure is in charge of development of relevant projects.

Development of rural roads (including district roads) is mainly represented by improvement of road surface and projects (without regular allocation of budget) are carried out in response to request of provincial councils and municipal governments, after preparing and signing an agreement (*convenio*) for demarcation of responsibilities; generally speaking, responsibilities of provincial and municipal governments cover procurement of materials and fuel cost of construction machinery, meanwhile CREA undertakes to provide construction machinery including operators.

As for development of irrigation system, projects are implemented at present at a total of 26 districts (16 districts in Azuay and 10 districts in Cañar). An average profile of these projects are as follows: 300 ha of benefitable area/beneficiary and 150 beneficiaries. For development of irrigation system participation of beneficiaries through *Minga* is indispensable

Table: Implementation Agencies

Target Sectors		Implementation Agencies
Water Supply System	Urban Area	Municipal & Provincial Councils
	Rural Area	Provincial Council
Roads Network	Trunk Network	Provincial Council, MOP
	Branch Network	Municipal Office
Irrigation System		CREA

For the last 4 years, an annual budget for development of infrastructure of the Bureau of Infrastructure, CREA is as summarized below.

Table: Annual Disbursement of Budget for Infrastructure Development
Bureau of Infrastructure, CREA

Sectors/Year	2000	2001	2002	2003
Rural Roads Network	213,344	367,349	408,535	262,350
Irrigation System, etc.	577,110	756,867	600,575	592,388
Total	790,454	1,124,216	1,009,292	854,738

(US\$)

From the above budget, the proportion chargeable to CREA is about 30% for rural roads development and about 60% for the irrigation system development. For the infrastructure development consisting of the rural roads network, irrigation system, etc., the amount of 1 million US\$ per year has been allocated and the total of 4 years has become around 4 million US\$.

The infrastructure development projects mentioned above are carried out using construction machinery and equipment possessed by CREA and most of these machinery and equipment are obsolete ones with their durable years having been terminated and with their working efficiency being deteriorated. Of 48 units in total, as few as 12 units (25%) are operated at present; most of these units, which were procured in the 80s, have a lapse of more than 20 years and are in poor condition and need to be repaired.

(2) Beneficiaries and Target Areas

A total of 8 irrigation districts (Total irrigable area amount to 6,415 ha) are operated and maintained by water users' association after completing development of irrigation system and 6 irrigation districts of them had been developed as public works of INERHI (Its jurisdiction was transferred to CREA in 1994). On the other hand, a total of 26 small-scaled irrigation projects (Total irrigable area: 7,750 ha) are carried out at present by CREA and 33% of them, or 2,550 ha, have been completed to date; the remaining 5,200 ha shall be developed within 10 years. Furthermore, a total of 11 projects (Irrigable area: 22,900 ha), relatively large-scaled ones, are at the phase of study and design in view of implementation in the long run.

With regard to development of rural roads network, development of simplified water supply system, construction of community center, and development of schools/medical care center, supply of materials and equipment shall be made in response to request of proposed benefited entities and communities.

(3) Profile of the Project

The operation of this project shall be entrusted to farmers' organizations, subject to provision of supporting services by CREA and local governments. Farmers' organizations shall prepare detailed action plan and shall develop the project through *Minga*-related activities. Supports of CREA and local governments shall cover detailed design/construction supervision of the project and lending of construction machinery, etc. For supporting activities of farmers' organizations, CREA is required to procure necessary construction machinery and equipment and effective use of existing construction machinery. In addition, farmers' organization shall apply CREA and local governments for supply of materials required for infrastructure development and shall be responsible for operation and maintenance of completed infrastructure.

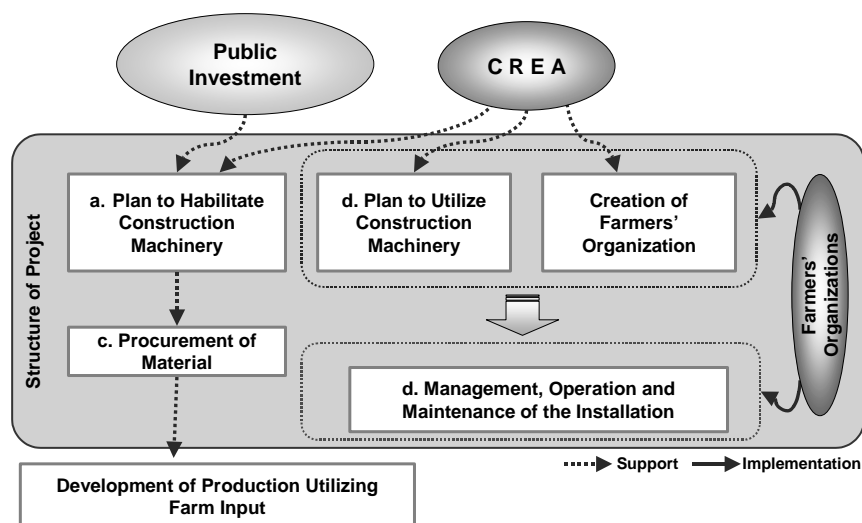


Figure: Overall Project Formation for Social and Economic Infrastructure Development

The following projects shall be carried out with participation of the beneficiaries in the target areas. These projects are designed to be implemented with their initiative taken by *Minga* and with grant of construction machinery and equipment by CREA, and it is thereby aimed to save investment cost of these projects as far as possible and to increase the number of beneficiaries as many as possible.

Table: Development Target and Implementation Method for Infrastructure Development

Development Sector	Development target	Implementation Method
Small-scaled irrigation works	About 2,500 ha of irrigable area (About 500 ha per year)	Public sector shall supply materials/equipment and project design, and beneficiaries shall construct irrigation works by themselves.
Rural roads network	Development of about 100 km a year	Public sector shall lend beneficiaries construction machinery represented by bulldozer and beneficiaries shall construct rural road by themselves.
Simplified water supply system	About 200 sites in total	Public sector shall supply materials/equipment and project design and shall lend construction machinery, and beneficiaries shall construct water works by themselves.
Construction of community center	About 200 communities in total	Public sector shall supply construction materials and beneficiaries shall construct community center by themselves.
Development of schools/Medical care center	About 200 in total	Public sector shall supply construction materials and beneficiaries shall construct school and medical care center by themselves.

In implementing the above-mentioned projects, the support of the public sector shall cover the following fields.

Table: Equipment and Materials Required for the Project

Fields	Detailed Contents
Heavy equipment	Bulldozer, loader, backhoe, motor grader, dump truck, etc.
Supply of materials	For irrigation works, for construction of ancillary works for road development and for construction/development of communities, schools and medical care centers.

The project comprises strengthening plan of construction machinery, plan of rational use of construction machinery, procurement of materials and equipment, and operation and maintenance of construction works.

a. Strengthening plan of construction machinery

The strengthening plan of construction machinery consists of rational use of existing units of construction machinery and procurement of new units so as to enable satisfactory implementation of the project on the initiative of *Minga*.

- Rehabilitation of existing construction machinery

As mentioned before, most of construction machinery under control of CREA, which have a lapse of more than 20 years since introduction to CREA in the 80s, are in poor condition and call for being rehabilitated immediately. For sustainable implementation of irrigation projects, an estimated cost of US\$ 800 thousand is required for immediate rehabilitation of construction machinery in poor condition.

Meanwhile, in response to request of local farmers as well as of municipal governments, CREA gives high priority to procurement of new construction machinery with an estimated cost of US\$ 4,200 thousand.

b. Plan for rational utilization of construction machinery

Construction machinery for CREA's infrastructure development projects are used for the purposes mentioned below and for achievement of the purposes mentioned-above, it is required to input the following kinds of construction machinery.

Purposes	Working Period	Construction Machinery to be Input
1. Operation and maintenance of irrigation works	2 years	Tractor (1), Motor Grader (1), Front Loader (1), Sprinkler (1), Road Compactor (1), Dump Truck (3)
2. Construction and operation/maintenance of reservoir		
1) Construction	5 years	Bulldozer (1), Front Loader (1), Dump Truck (1), Compressor (1)
2) O/M	2 years & 3 months	Bulldozer (1), Front Loader (1), Dump Truck (1)
3. Construction and operation/maintenance of irrigation canals (including access road to these canals)		
1) Construction	4 years	Bulldozer (1), Large-scaled Bulldozer(1)
2) O/M	1 year & 9 months	Bulldozer (1), Front Loader (1), Dump Truck (2)
4. Construction, operation/maintenance of rehabilitation of rural roads	1,500 hours/year (Successive)	Bulldozer (2), Power Shovel (1), Backhoe (1), Compressor (1)

c. Procurement of materials and equipment

Aiming at poverty reduction in the Sierra-Belt region in the provinces of Azuay and Cañar as well as enhancement of farm productivity, small-scaled irrigation projects are carried out by CREA at a total of 26 districts.

In case of direct involvement of CREA in infrastructure development projects, the following materials and equipment should be procured.

Development Activity	Implementation Method	Materials to be Required
Small-scaled irrigation works	Direct involvement of CREA with participation of beneficiaries	- For concrete works (Cement, gravel and sand) - For laying pipe (PVC, valve, accessories, etc.) - Fuels (For construction machinery)

About 2,500 ha of the above-mentioned small-scaled irrigation project have been already completed to date and the remaining 5,200 ha are projected to be completed in 10 years (500 ha/year) from now on; about 2,500 ha of land shall be irrigation in 5 years with an investment of US\$ 2,500 thousand (US\$ 1,000 for procurement of materials and equipment).

In so far as construction of rural roads network, simplified waterworks and community center/medical care center/schools is concerned, the public sector, in response to request of

inhabitants, shall supply materials and equipment subject to construction works being undertaken by inhabitants.

d. Operation and maintenance of completed works

Water users’ association is organized by the beneficiaries of irrigation system development project for each district. A provisional organization called as “Pre-Directorio” is to be formed prior to the setout of construction works and the said organization shall take the initiative for participation of the beneficiaries to *Minga* in the course of implementation of construction works. The leader of the *Pre-Directorio* is expected to play important roles as: exchange of opinions with public agencies (CREA, provincial councils and municipal assemblies), signing an agreement, inducing *Minga* to participate in construction works, etc. Thus, the progress of construction works is heavily influenced by leadership and behavior of the leader.

CREA shall be in charge of providing various assistance to water users’ association after completion of irrigation works; to hold technical and other fields of seminars and to monitor periodically the performance of irrigation works. Agronomists of CREA and INIAP, on the other hand, shall be responsible for rendering technical assistance on crop cultivation to farmers who are eager to embark on cultivation of nontraditional crops suitable under irrigation farming. These institutional supporting services of public agencies constitute focal role for sustainable development of the agricultural sector in the Study Area and thereby are expected to be strengthened to perform their services satisfactorily.

(4) Operation of the Project

The outline of the activities involved in small-scaled irrigation project which forms a part of development program for social and economic infrastructure under responsibility of CREA is as summarized in the table below. Similar activities are envisaged in development of rural roads network, simplified waterworks and communities/medical care centers/schools which is undertaken by beneficiaries with supports rendered by the public sector.

This project is expected to attain target goals by performing respective responsibility of beneficiaries and the public sector.

Table: Outline of the Project's Activities

Development Stages	Roles of Beneficiaries	Roles of Public Sector
Request	<ul style="list-style-type: none"> • Submission of request form • Invitation of personnel of the public agencies 	<ul style="list-style-type: none"> • Review on request form • Review on necessity and feasibility of project
Preparation	<ul style="list-style-type: none"> • Attendance of site reconnaissance survey • Involvement in project planning • Discussion on demarcation of activities 	<ul style="list-style-type: none"> • Field works and surveying • Preparation of project plan • Elaboration of detailed design and construction plan
Implementation	<ul style="list-style-type: none"> • Conclusion of agreement (Demarcation of activities) • Supply of labor force through <i>Minga</i> • Supply of accommodation and meals 	<ul style="list-style-type: none"> • Overall supervising of construction works • Implementation of construction works with machinery and concrete works • Supervision on surveying and progress of construction works
O/M of Completed Works	<ul style="list-style-type: none"> • Organizing water users’ association • Operation and maintenance of completed works • Collection of O/M fee and water charge 	<ul style="list-style-type: none"> • Technical assistance on organizing • Holding various technical seminar • Technical assistance on O/M of irrigation works

The project for social and economic infrastructure development shall be put into implementation in response to the request of the inhabitants in compliance with their needs to be made to the public sector (CREA).

6.3.4 Environmental Conservation

The greater part of destitute people in the provinces of Azuay and Cañar are represented by small and marginal farmers and poverty reduction would not be attained without adequate conservation of natural resources, source of productive activities of these farmers. In this connection, public agencies as well as local people are required to take a step for conservation of “Bio-ecosystem”, “Soils” and “Water Resources”.

As a measure in the concrete, it is proposed to maintain productive capability of soils by means of cultivation of water resources and conservation, renovation and management of forests functioning countermeasure against soil erosion. On the other, due to the fact that administration and maintenance of forests by inhabitants of target area is indispensable, reforestation project shall comprise environmental education for local people with an aim to raise their awareness on environmental conservation and participation in environment-related activities.

The reforestation program shall be represented by two projects: Promotion for reforestation and Strengthening of environmental education.

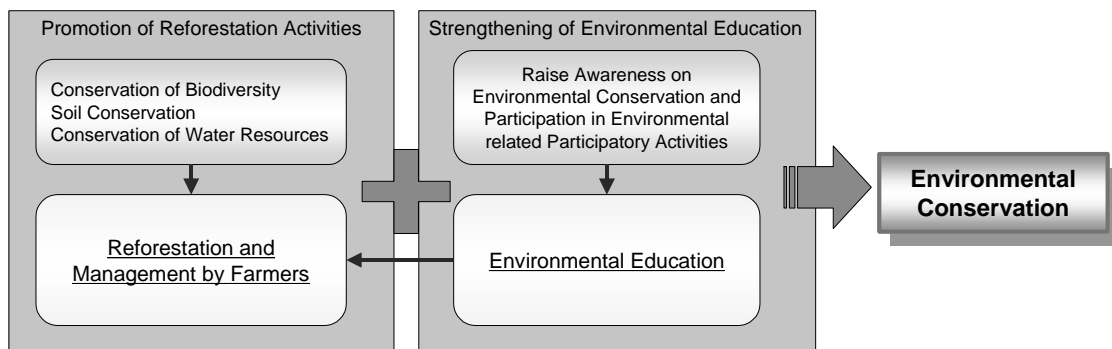


Figure: Policies for Environmental Conservation

6.3.4.1 Project: Promotion for Reforestation

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

The target area for implementation of the reforestation promotion project comprises the following five peculiar bio-ecosystems according with vegetation.

- a. Chaparro: General term for virgin forests at the lands around 3,000 m.a.s.l.
- b. Paramo: High land pasture at the lands around 4,000 m.a.s.l.
- c. Neblina: Semi-tropical zone covered with sea fog throughout the year influenced by humid wind blown from costal region
- d. Pajonal: Pasture lands higher than 3,000 m.a.s.l.
- e. Helada: Cold region (Severe condition for vegetation)

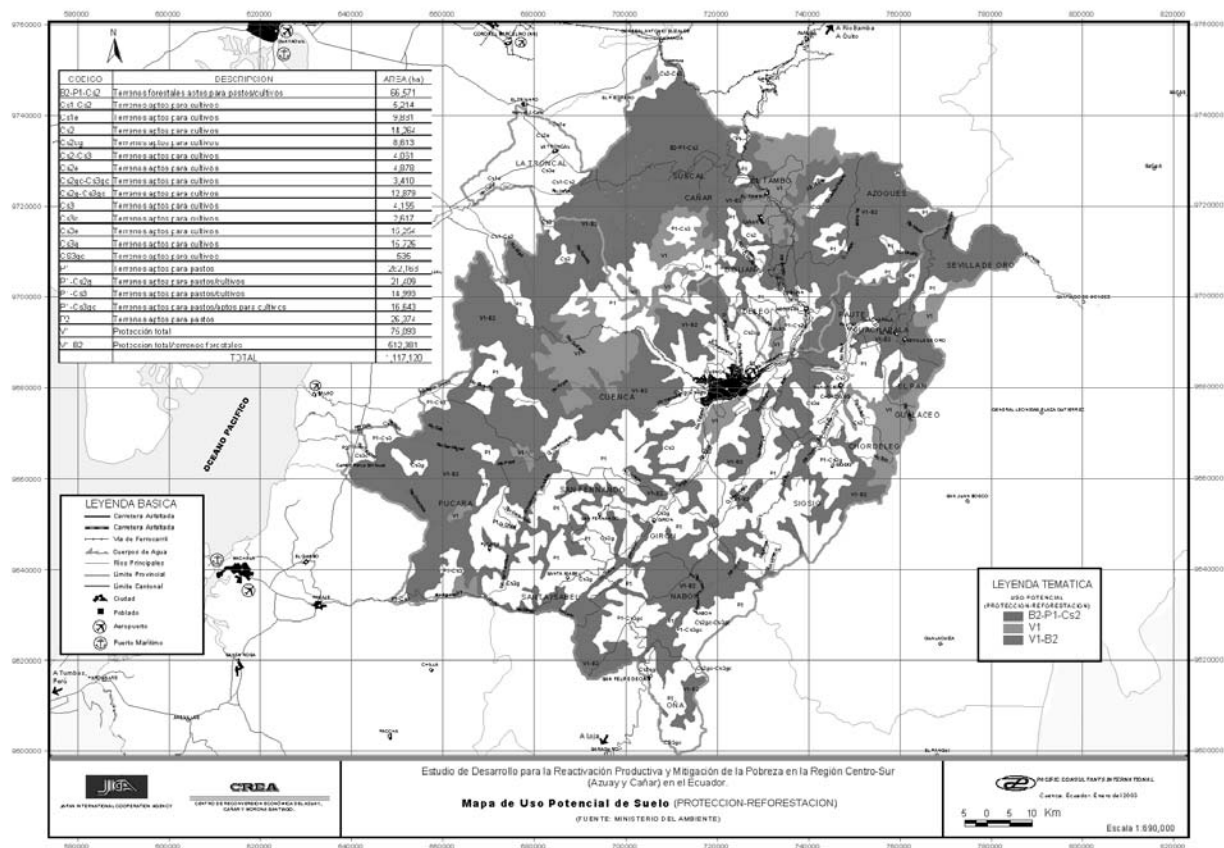
The target areas for expansion of agriculture and livestock farming are the lands represented by *Chaparro* lower than 3,500 m.a.s.l. where relevant activities prevail. Vegetated area including peculiar vegetation of Andean region in these lands has decreased explicitly with progress of farming. This phenomenon is especially the case among marginal farmers affecting badly environmental resources, a guarantee for sustainable implementation of productive activities in the region.

Implementation of reforestation projects makes sense in terms of conservation of water resources, mitigation of soil erosion and proceeding with environmental conservation for the areas of high public interests and for the areas not to have been used for agricultural and livestock purpose. Besides, agro-forestry and silvi-forestry projects are necessitated to the lands which are vulnerable

to degradation of their capability under agricultural and livestock practice.

(2) Beneficiaries and Target Areas

In view of conservation of land capability and preservation of water resources, priority in deciding target areas of reforestation projects shall be given to *Pajonal* area located upper reach of river basin, high mountain area and slope area of mountainside along rivers. These benefitable areas shall be classified into environmental conservation areas in which traditional varieties shall be planted and forestall production areas in which marketable varieties of plants shall be introduced, and reforestation methodology shall follow specific physical conditions of respective areas. In particular, *Chaporro* is considered to be an important forestry for environmental conservation of the region; reforestation shall be conducted at the lands where productive activity is likely to decline, located in the circumference of *Chaparro* and, at the same time, agro-forestry and silvi-forestry projects shall be implemented at farmlands and grazing lands encompassing *Chaparro*. Eligible beneficiaries shall be not only farmers, farmers' associations, primary schools, local government offices, administrative agencies of hydroelectric power generation stations and NGO, but also private companies like oil companies. Potential areas from the viewpoints of soil classification and land use are proposed as shown in the map below.



Map: Reforestation Areas

(3) Profile of the Project

The operation of this project shall be entrusted to farmers' organizations, subject to provision of supporting services by CREA and local governments. Farmers' organizations shall prepare detailed action plan, meanwhile CREA shall supply them seedlings to be produced at its farms. Supports of CREA shall cover production and supply of seedlings for reforestation and encouragement of reforestation activity by means of provision of various extension services targeting farmers' organizations. At the same time, CREA shall procure necessary fund required for production of seedlings for reforestation.

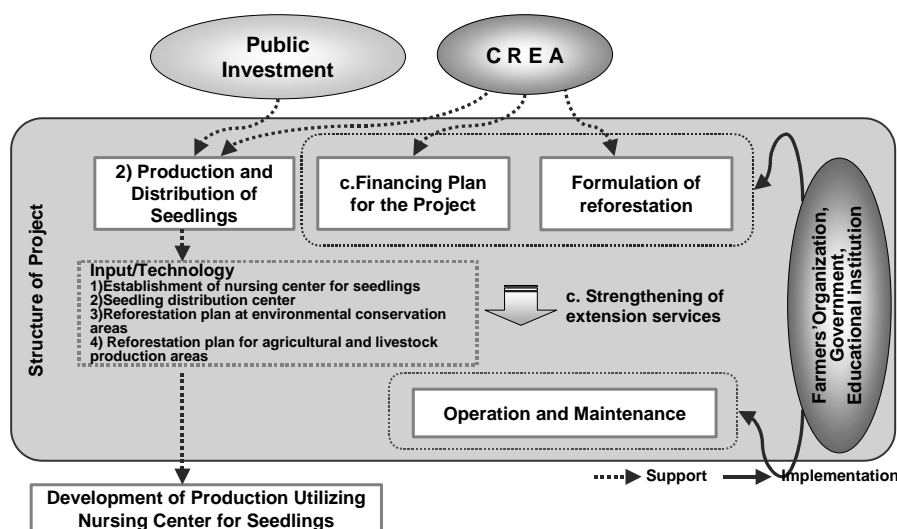


Figure: Overall Project Formation for Promotion for Reforestation

The target for implementation of reforestation project shall be 1,000 ha a year: 500 ha for farmers, farmers' associations and primary schools, 300 ha for local government offices and 200 ha for private sector and NGO. Distribution and transportation of necessary seedling for this reforestation project shall be made on grant basis.

Targeting lands with high public-interest, reforestation based on native varieties of plant shall be proceeded for hastening of environmental conservation. Meanwhile, marketable plants following agro-forestry and silvi-forestry methodologies shall be recommended on farmland, in view of raising interest of local people in participation of the project as well as maintenance of land productivity, a guarantee for sustainable implementation of productive activity. It may worth while to indicate that reforestation project aiming at maintenance of land productivity of farmlands is proposed to be carried out in parallel with other projects.

Table: Relation between Reforestation Project and Other Projects in Agricultural Area

Projects	Scope of Reforestation
Upgrading of subsistence-oriented agro-products	In order to mitigate soil erosion at farmlands, loss of crops attacked by animals and fowls, loss due to wind during harvesting, wooden fences at boundary of farmlands shall be installed. Eligible materials for wooden fence shall be such species as are endowed with consolidation function of nitrogen, can be used as timber having germinating nature, are marketable like fruit tree, etc., and eligibility shall depend on needs of target areas.
Support to cash crops production	
Encouragement of agro-products processing industry	
Improvement of milk productivity among marginal cattle farmers	Aiming at producing consistent amount of milk, to be introduced feeding trees, shade trees against being withered of pasture, shade trees for grazing of cattle, wooden fence for division of land use, and reforestation in combination with pasture for mitigating soil erosion.
Encouragement of dairy products processing industry	
Improvement for marketing of dairy products	

The project for promotion of reforestation shall consist of Establishment of nursing center for seedlings and Seedlings distribution plan.

a. Inputs/Technologies

Once the comprehensive reforestation plan in the provinces of Azuay and Cañar (Selection of target areas, selection of the species of trees to be planted, production planning of seedlings, action plan, elaborating contents of application form, reforestation project in collaboration with other relevant agencies, reforestation program at environmental conservation areas and reforestation program at agricultural and livestock productive areas) shall have been formulated, an establishment of nursing center for seedlings, and production and distribution of seedlings shall be carried out.

In addition, similar transfer of technologies shall be conducted targeting schools, local government and private firms which are expected to receive seedlings for reforestation, as the case may requires.

c. Financing plan

Distribution and transportation of seedlings together with transfer of technologies on reforestation and nursing of plants for reforestation activities with participation of farmers as well as for those to be conducted by primary schools in collaboration with CREA shall be made on grant aid basis (Estimated at about 60% of the total investment cost). Labor force on transplanting and procurement of fertilizers (Estimated at 40% of the total investment cost) shall be charged to farmers and schools; nursing of seedlings and operation and maintenance of planted trees shall be to the responsibility of farmers and schools. As source of fund for this project, budget allocation of central government, reimbursed fund from 2KR project and NGO fund are proposed.

On the other hand, distribution of seedlings to local governments and to the reforestation activities to be carried out by private firms in collaboration with CREA shall be subject to a charge including transfer of technologies mentioned before.

(4) Premises for Implementation of the Project

Proposed beneficiaries of the reforestation project composed of farmers, schools, local governments and private firms are required as pre-condition to hold officially registered land for reforestation, to supply labor force for transplanting of plants and establishment of measures against soil erosion and to arrange necessary fund. Demarcation of responsibilities between beneficiaries and the public sector is as given below:

Table: Premises of Implementation of the Project

Beneficiaries	Public Sector	Inputs
<ul style="list-style-type: none"> - Preparation of reforestation plan - Transplant and fertilization - Measures against soil erosion - Nursing administration (Lopping off of lower branches, thinning out of excess plants and fertilization) - Deforestation - Reforestation again 	<ul style="list-style-type: none"> - Support for preparation of reforestation plan - Appraisal and approval on reforestation plan - Supply and transportation of seedlings - Technical assistance (Transplanting, measures against soil erosion, nursing administration, deforestation) - Monitoring 	<p>Beneficiaries: fund (For procurement of fertilizers), personnel, labor force, farm instruments</p> <p>Public sector: Seedlings, transportation of seedlings, personnel in charge of extension services</p>

6.3.4.2 Project: Strengthening of Environmental Education

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

Burning off of fields as praying for rain is a traditional custom in mountain regions in Ecuador, that causes sometimes a forest fire and, at the same time, leads to degrade productive capability of soils in combination with the progress of intensive farming in recent years. Although serious land erosion has not been observed in the region as a whole thanks to relatively light rainfall intensity, lands with a slope more than 20%, which occupy about 10% in the provinces of Azuay and Cañar, are vulnerable to erosion as a consequence of agricultural and livestock development as well as deforestation. Furthermore, due to under-development of drainage in rural area, worsening of environmental circumstances stands out. Under the situation, a campaign against forest fire is extended by the Government of Ecuador with the initiative taken by the Ministry of Environment and measures for improvement of environmental conditions are taken by regional and local government offices.

Reforestation is an indispensable attempt not only to mitigate degradation of land resources closely related with agriculture and livestock activities but also to secure water resources for local people.

Because considerable lapse of time is required for attaining economic value and cost is incurred for operation and maintenance, institutional supporting services are required to launch reforestation project in the region where most of farmers engage conventional self-sufficient-oriented farming

(2) Beneficiaries and Target Areas

In view of conservation of bio-ecosystem, soils and water resources, an environmental education shall be oriented to farmers who are likely to be affected by degradation of natural resources through their productive activities and to students (Primary, secondary and higher education) as well. Proposed target areas shall be those located upper reach of river basins and on the periphery of rivers, both of which are important zones for conservation of soils and water resources; in addition, lands covered with *Paramo* and *Chaparro*, peculiar vegetation of the region and their surrounding farms shall also be included.

(3) Profile of the Project

The operation of this project shall be entrusted to CREA. Eligible beneficiaries of the project shall be local people; intensive enlightening activities relevant to conservation of soils and water resources that affect considerably on farm production shall be carried out. On the other hand, targeting students of primary and secondary schools as well as higher education, issues to be enlightened shall fall on apprehension of removable natural resources of the region and on conservation and protection of limited existing resources. For this purpose, CREA shall hold relevant seminar and prepare relevant guideline, and, at the same time, shall render extension services on reforestation technology, management of project, etc. Furthermore, production of seedlings at nursing centers is also conducted by CREA. On the other hand, CREA shall procure necessary fund required for production of seedlings for reforestation.

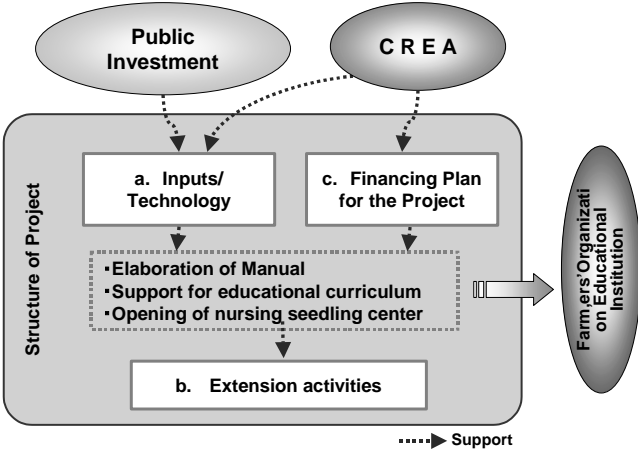


Figure: Overall Project Formation for Strengthening of Environmental Education

a. Inputs/Technologies

Referring to the reforestation promotion project, aiming at raising perception and awareness for participation of farmers on reforestation activities, environment education on I) Importance of environmental conservation and reforestation, ii) Land use proposal for environmental conservation and iii) Agro-forestry and silvi-forestry shall be rendered in the course of preparatory stage of the said project.

Public supporting agencies shall prepare educational materials and manuals on reforestation and shall provide them to the primary and secondary schools which are located within the target areas of the reforestation promotion projects, including technical assistance relevant to education curricula on environmental conservation. Regarding higher education, the said agencies shall open the

nursing centers to public for conducting on-the-job education on reforestation there; an investigation on actual situation of reforestation project shall be included in the curricula among lessons at schools to disclose target areas of the reforestation project.

The following environmental education are envisaged in reforestation projects relevant to environmental conservation.

Table: Scope of Environmental Education by Beneficiary

Beneficiaries		Scope
Farmers		<ul style="list-style-type: none"> • Apprehension of regional environment and its conservation • Enlightening activity against burning of field and forest fire • Protection of forests and soil conservation works • Sanitation relevant to domestic waste water and water supply
Students	Primary/Secondary	<ul style="list-style-type: none"> • Introduction of regional environmental education (Apprehension of surrounding environment, climate, natural resources, agricultural and livestock production) • Production of seedlings for reforestation and agricultural production
	Higher education	<ul style="list-style-type: none"> • Practice of reforestation project at department of forestry of university (From application to reforestation planning) • Practice of farming by department of agriculture of university (Project planning, farm management and auditing) • Practice on socio-economic survey (problem analysis and identification of high priority projects)

b. Provision of extension services

An environmental education to farmers shall be rendered by means of propaganda and dissemination so that the importance of reforestation and comprehension and recognition on administration and maintenance of forests should be enlightened. In parallel with a growth of trees, practical technology for administration of trees shall be transferred together with enlightening the importance for environmental conservation.

On the other hand, environmental education at schools, curricula relevant to environmental conservation matching respective educational level shall be prepared with the initiative taken by schools and public supporting agencies shall involve in introduction of nursing centers and proposed reforestation areas and in supply of materials for environmental education.

It may be worth while to indicate that coordination and collaboration with the campaign program against forest fire of the Ministry of Environment, sanitary environment enlightening activities of municipal governments and reforestation project for conservation of the Paute River Basin should be made in implementation of present project.

c. Financing plan

The cost for establishment of nursing center for seedlings, preparation of materials/manuals for lessons and personnel for extension services to be incurred in relation with implementation of the project shall be born by CREA. On the other hand, about 80% of the cost for practices at higher education institutions shall be charged to benefited institutions and the remaining 20% to CREA.

(4) Premises for Implementation of the Project

The present project for strengthening of environmental education shall be implemented in combination with the project for promotion of reforestation, in case of targeting farmers; meanwhile, in case of targeting students, educational institutions, an implementation agency of this project, are requested to prepare relevant curricula and to arrange for procurement of necessary fund, although these institutions may receive supports of CREA and INIAP, as the case may arise.

Demarcation of responsibilities between beneficiaries and the public sector is as proposed below:

Table: In Case of Targeting Farmers

Beneficiaries	Public Sector	Inputs
<ul style="list-style-type: none"> - Participation in propaganda for promotion of reforestation project to be undertaken by the public sector - Participation in training course on environmental conservation through implementation of the project for promotion of reforestation 	<ul style="list-style-type: none"> - Preparation of materials/manuals for lessons - Implementation of environmental education 	<p>Beneficiaries: Personnel (Coordinator with the public sector)</p> <p>Public sector: Materials/manuals for lessons, personnel in charge of technical extension services</p>

Table: In Case of Targeting Students

Categories	Educational Institutions	Public Sector	Inputs
Primary/Secondary Education	<ul style="list-style-type: none"> - Support for preparation of materials/manuals for lessons - Introduction of curricula on environmental education 	<ul style="list-style-type: none"> - Preparation of materials/manuals for lessons - Establishment of nursing center for seedlings - Support for introduction of curricula on environmental education 	<p>Educational institutions: Personnel, curricula on environmental education</p> <p>Public sector: Materials/manuals for lessons, personnel in charge of technical extension services</p>
Higher Education	<ul style="list-style-type: none"> - Support for preparation of materials/manuals for lessons - Introduction of curricula on environmental education 	<ul style="list-style-type: none"> - Preparation of materials/manuals for lessons - Establishment of nursing center for seedlings - Preparation of site for practice - Support for introduction of curricula on practice 	<p>Educational institutions: Personnel, preparation of curricula on practice including its cost</p> <p>Public sector: Materials/manuals for lessons, personnel in charge of technical extension services, preparation of site for practice</p>

6.3.5 Functional Strengthening of Public Supporting Organization

A stabilization and expansion of agricultural and livestock output among small and marginal farmers is an indispensable attempt for attaining of poverty reduction. In particular, the impact of agriculture-related institutional supporting services on the areas which have been alienated from such services is considerably large.

In order that public supporting organizations should realize and attain the goals of respective project proposed in the Master Plan, it is not enough to put exclusively financial resources but is of importance to render institutional supporting services comprising technology transfer and extension services targeting proposed beneficiaries in a satisfactory manner. In this connection, it is prerequisite to upgrade technological standard of the public supporting agencies in charge of the said services as well as to strengthen the contents of the services. On the other hand, upgrading and effective utilization of equipment and facilities required for supporting services to farmers as well as intensification of research and investigation aiming at enhancement of technological standard of the services is essential.

In view of reactivating productive activities of farmers the following aspects should be taken into consideration.

- To render institutional supporting services to the fields for which beneficiaries group are anxious.
- To render institutional supporting services to the activities which are likely to bear fruits in shorter period after commencement of project
- To exist a leader who act focal role in beneficiaries group
- To strengthen enlightenment activities on raising sense of responsibility and willingness of

beneficiaries for projects

- To raise interest of local people on projects by vesting them with the sense of satisfaction and superiority through contribution to the society in the course of participation in projects

The role of CREA and INIAP, local agencies in charge of rendering supporting services both in financial and technical aspects directly to small and marginal farmers in the target area of the Master Plan, to be played in attainment of upper goals of the present Master Plan is of great importance and functional strengthening of these agencies with introduction of relevant programs is essential accordingly.

The following measures shall be input for strengthening the services of CREA and INIAP.

Table: Measures for Functional Strengthening of CREA and INIAP

Agencies	Proposed Measures
CREA	<ul style="list-style-type: none"> • Procurement of construction machinery for social and economic infrastructure development • Restructuring of experimental farms • Improvement of data compilation system • Improvement of existing training center for folk handicrafts manufacturing • Improvement of vehicles
INIAP	<ul style="list-style-type: none"> • Improvement of Bullcay Experimental Station (Aiming at production of seedlings and nursing for Andean fruits and hybrid varieties of basic crops) • Improvement of Chiquipata Research Farm (Aiming at production of seedlings and nursing for hybrid varieties of basic crops) • Improvement of vehicles

6.3.5.1 Project: Functional Strengthening of CREA

(1) Actual Situation of Target Area and Rationale for Implementation of the Project

The role of CREA to be played in the course of implementation of the present Master Plan is extremely essential and the performance of CREA shall have considerable impact on the general outcome of the projects envisaged in the Master Plan. The activities expected to CREA cover a variety of range and call for expertise. The outcome of the pilot projects disclosed that the contribution of CREA was variable by field and by person in charge.

For implementation of the Master Plan, CREA, conceiving clearly defined purposes, is expected to render adequate guidance, supports and extension services covering all the projects included in the Master Plan. In this connection, not only raising awareness and empowerment of personnel of CREA in charge of technical fields but also renovation and strengthening of organizational structure of CREA itself should be promoted in view that implementation organization of the projects under the initiative of CREA should be reinforced and technical and operational capability should be upgraded. The Project for functional strengthening of CREA is the most important project for bearing satisfactory fruits of the Master Plan.

(2) Target Projects and Scope of Supporting Services

The scope of supporting services and actions to be undertaken by CREA for the projects included in the Master Plan is as summarized in the table below. A variety of supporting services are required for CREA in implementation of the Master Plan and the Project for functional strengthening of CREA aims to attain integrated upgrading of capability of all facilities, machinery, materials and personnel of CREA.

Table: Scope of Supporting/Extension Services of CREA by Project

Projects	Scope of Supporting/Extension Services of CREA
1. Improvement of Agriculture and Livestock Sector	
1.1 Upgrading of subsistence-oriented agro-products	Establishment of seed bank, Extension of technologies on cultivation of crops, fertilization and application of agro-chemicals, Extension of technology on use of organic fertilizers, Forming and functional strengthening of farmers' organization
1.2 Raising farmer's income	Support for preparing contract on project implementation by farmers' organization and concluding relevant contract, Support for preparing contract on project participation by farmers' organization and concluding relevant contract, Support for financing activity of organizations' financial institution, Technical assistance on production of compound feed, Technical assistance on construction of joint processing and sales facility
1.3 Improvement of milk productivity among marginal cattle farmers	Technical assistance on forming and operation of farmers' organization, Support on concluding contract on project implementation, Support on preparing detailed action plan, Technical assistance on operation and maintenance, Distribution of hybrid seeds of pasture, Technical assistance on feeding, raising and sanitary control, Technical assistance on livestock farming, Technical assistance on grazing, feeding and sanitation management, Extension service for soil conservation method
1.4 Support to cash crops production	Not applicable
1.5 Improvement for marketing of dairy products	Support on preparation of regulations on project implementation and reaching an agreement, Support on operation/maintenance and project planning, Study on market condition within the region, Support on consistent supply of milk and quality control, Support on structuring of collection and forwarding system, Support on promotion for markets and decision of marketing destination, Support on forming association for collection and forwarding of milk including preparation of articles and operation of the association, Introducing eligible financing institutions and support on procedure for application of loan, etc.
2. Activation of Non-agricultural Sector	
2.1 Encouragement of agro-products processing industry	Support to entrepreneurs, Introducing financing institutions for entrepreneurs and support on application of loan, etc., Support on operation of the project
2.2 Encouragement of dairy products processing industry	Support for functional strengthening of existing organizations, Support for activities of entrepreneurs, Technical assistance on sanitary control, upgrading of quality and expansion of output, Introducing sales channel secured with elevated price and consistent demand, Market research, Introducing of financing institutions and support on application of loan, etc.
2.3 Encouragement of rural handicrafts manufacturing industry	Support on joint procurement of manufacturing factory and machinery and on operation of factory, Support for operation of the project, Support on forming manufacturers' association, Support for recruiting of engineers, Study on feasibility on expansion of the project, Development of regional products, Support for getting loan through micro-credit system
3. Upgrading of Living Standard	
3.1 Social and economic infrastructure development	Assistance on request for implementation of project, Appraisal on rationale for implementation of project, Procurement and rehabilitation of construction machinery, Study on necessity of materials, Assistance on request for procurement of materials and equipment, project formulation, Technical assistance on operation of construction machinery, Support to implementation of infrastructure development, Operation and maintenance of construction machinery
4. Environmental Conservation	
4.1 Promotion of reforestation	Establishment of nursing center for seedlings, Formulation of nursing plan, Preparation of seedling distribution plan, Nursing, Reforestation activity, Distribution of seedlings, Technical assistance on farmers' reforestation activity
4.2 Strengthening of environmental education	Environmental conservation, Conservation of forests, Enlightening activity on sanitary control, Environmental education, On-the-job training for nursing and reforestation
5. Functional Strengthening of Public Supporting Organization	
5.1 Functional strengthening of CREA	Strengthening of existing facilities, Rearrangement of existing facilities, Review on management system, Introduction of improvement measures, Training on intensification of technical assistance/extension services

(3) Profile of Project

For supporting respective project proposed in the Master Plan, this project shall comprise such components as modernization of facilities and machinery, rational use of existing facilities, capacity

building of personnel and strengthening of technical assistance and extension services to beneficiaries.

a. Inputs/Technologies

a-1 Modernization plan of facilities and machinery

Modernization plan of facilities and machinery consists of replacement of physically deteriorated machinery (Procurement of construction machinery), rehabilitation of building (Improvement of existing facilities) and strengthening of human resources. Prior to implementation of modernization plan of facilities and machinery, it is prerequisite to design future plan of each facility.

a-1.1 Procurement of construction machinery

Infrastructure development undertaken by CREA through Bureau of Infrastructure consists of development of irrigation system and rural roads. Development of irrigation system in progress at present cover a total of 16 districts within the Study Area: at 10 districts in Azuay and at 10 districts in Cañar benefiting a total of 150 farmers with an average area of 300 ha per district. This irrigation system development project is carried out under participatory approach of the beneficiaries through *Minga*.

Development of rural roads (including district roads) is mainly represented by improvement of road surface and projects (without regular allocation of budget) are carried out in response to the request of provincial councils and municipal governments,; generally speaking, responsibilities of provincial and municipal governments cover procurement of materials and fuel cost of construction machinery, meanwhile CREA undertakes to provide construction machinery including operators.

Although CREA is a central government's organization belonging to the Ministry of Presidency, its services and responsibilities are closely linked with regional development. Renewal of machines and development of the facilities for operation and maintenance are required, since lack of mobility is caused by decrepit condition of the construction equipment.

a-1.2 Improvement of existing facilities

CREA has established a number of farms, experimental stations, repair shops and warehouses. In addition, a handicraft training center is established at the lot next to the headquarters of CREA. These facilities have been utilized for long time without sufficient budget for operation and maintenance and most of them thereby are in poor physical condition. Under the circumstances CREA is studying on how to make an effective utilization of these facilities, including disposal by sale. On the other hand, streamlining measures of CREA including rearrangement of facilities, bureaus and sections is underway and it is expected that these measures should bear fruits.

In due consideration of above-mentioned circumstances, an improvement plan contributing to functional strengthening of CREA shall target headquarters, training center for handicraft manufacturing and vehicles.

Table: Scope of Activities and Inputs for Sub-project for Improvement of Existing Facilities of CREA

Sub-projects	Improvement Plan	Inputs
1) Strengthening of telecommunication system	In view of smooth implementation of the project with participatory approach of beneficiaries, various computers and accessories shall be procured and replaced to connect with broad internet network of CREA and to establish LAN.	<ul style="list-style-type: none"> • Connection of broad internet network and establishment of LAN • Procurement and replacement of various computers and accessories
2) Improvement of handicrafts training center	Aiming at encouragement of small-scaled enterprises in the region, various facilities for transfer of technologies on handicraft manufacturing sector shall be improved.	<ul style="list-style-type: none"> • Improvement of various facilities for transfer of technologies on handicrafts manufacturing
3) Procurement and rehabilitation of vehicles	CREA has at present a total of 22 vehicles and most of them are in obsolete condition after to years of introduction. For improvement of the project and for conducting transfer of technologies, procurement and rehabilitation of new vehicles shall be proceeded.	<ul style="list-style-type: none"> • Rehabilitation of existing 22 vehicles • Procurement of 10 vehicles

b. Plan for effective utilization of farms

For conducting on-the-job transfer of agricultural technologies, CREA has established a total of 10 farms (reforestation, fruits cultivation, vegetables cultivation, aquaculture of trout, etc.) in four provinces of Azuay, Cañar, Morona and Santiago, in which such activities as production of seedlings for reforestation, raising and milking of dairy cattle for technology transfer, technology transfer for fruits cultivation, etc. are carried out. Activities actually carried out at Chuquipata Farm and at Iza Vieja Farm are as follows:

Table: Actual Production of Seedlings at Chuquipata and Iza Vieja Farms

Production of seedlings	<p>Seedlings for fruits in combination of reforestation are produced at about 30 nurseries</p> <ul style="list-style-type: none"> • Because seedlings for fruits and flowers are produced at private sector, production is focused on those for reforestation. • Varieties of plants: Sauce, mirumiru, moice, retama, sauco, eucalyptus, cypress, pine, acacia, arizo, bulaban, tree tomato, apple, etc. • Employees: 1 manager and 8 workers • Benefited area: Whole province
Shipment method	<p>To be shipped about 200,000 units a year, in selection of varieties suitable to local land conditions.</p> <ul style="list-style-type: none"> • Distribution of sale is conducted following agreement to be concluded with municipal offices and parroquias; to distribute and sell a package of 10 – 100 thousand of units, with transportation to shipment destination.

These activities at CREA's farms are important for rendering technical assistance services to the projects of the Master Plan in terms of research on seedlings, hybrid seeds and seeds and saplings as well as of supply of outputs as a consequence of this research and upgrading of these activities thus is anticipated through modernization of farms.

Table: Improvement Plan for Each Farms

Target Farms	Improvement Plan
<p>The following farms belonging to CREA shall be improved to functional strengthening on their technical assistance services relevant to reforestation, livestock farming, fruits production, etc.</p> <ul style="list-style-type: none"> • Iza Vieja: Procurement of vehicles for transportation of seedlings for reforestation, tractor for farming, etc. • Burgay: Milk cooling and preservation facility, Installation of mechanized milking room • Chuquipata: Procurement of vehicles for transportation of seedlings for reforestation, rehabilitation of training/administration building • Irquis: Installation of mechanized milking room, silage, construction of irrigation works • Chirimachay: Rehabilitation of hydraulic facility for 	<p>1) Feed production and storage</p> <ul style="list-style-type: none"> • To study on actual situation of varieties of pasture and trees for feeding cattle, etc. • To conduct analysis on soils and feed. • To render technical assistance on management of grazing lands. • To render technical assistance on securing feed during dry season. • To prepare and disseminate technical manuals <p>2) Cattle raising technologies</p> <ul style="list-style-type: none"> • To identify eligible farmers for surveying actual situation of cattle farming. • To render technical assistance on dissemination of cattle raising technologies with lowered cost. • To disseminate suckling technologies.

<p>aquaculture of trout, procurement of investigation instruments</p> <ul style="list-style-type: none"> • Guachapala: Construction of rural roads and irrigation works, construction of administration house 	<ul style="list-style-type: none"> • To prepare and disseminate technical manuals <p>3) Sanitary control of cattle</p> <ul style="list-style-type: none"> • To survey on actual situation of sanitary control on cattle. • To render technical assistance on precaution method against chronic diseases and inflammation of breasts. • To study on introduction of adequate breeds of cattle. • To prepare and disseminate technical manuals <p>(Experimental Station) To aim at production of seeds for specific products in the Andean Region</p>
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c. Plan for capacity building of personnel

It was reported in the course of implementation of the pilot projects that extension services of CREA to farmers proved to be unsatisfactory. In this regard it is advisable that the project for empowerment of CREA's personnel in charge of technical matters and extension services should be included in the list of the projects for the Master Plan. The program relevant to upgrading of capability of personnel in charge of extension services consists of: (1) To acquire extension technologies under guidance of external specialists, in parallel with implementation of the pilot project and (2) To receive lessons and directions directly from external specialists through training method.

c-1 Acquisition of extension technologies in parallel with implementation of pilot projects

For implementation of the projects for the Master Plan, participation of extension specialist outside CREA shall be applied for and these specialist shall take the initiative for teaching and giving lessons to the personnel of CREA in charge of extension services, through on –the –job training method. Apart from this kind of training, the other training aiming at upgrading operational capability of a project shall be provided. Although these training methods are highly valuable for acquiring enriched contents of extension technologies, proposed beneficiaries shall be limited. In the light of this constraint, it is proposed that the beneficiaries of the said training should undertake to give lessons and directions on extension technologies in the case (2) of c below, which, in turn, shall contribute to empowerment of CREA's personnel in charge of extension services. For putting this proposal into implementation, procurement of fund needed for pilot projects from external source is required at the initial stage of the Master Plan.

Scope of the training is as given in the table below.

Table: Scope of Training

Preparatory phase	Mid-term phase	Termination phase
<ul style="list-style-type: none"> • Project finding • Formation of farmers' association • Setting Targets • Preparation of project plan, scope of the project and implementation schedule • Compilation of project inputs • Appraisal method and selection of appraisal method 	<ul style="list-style-type: none"> • Monitoring method • Monitoring, inputs and outcome 	<ul style="list-style-type: none"> • Appraisal on attainment of targets

c-2 Extension method instruction training

This attempt aims at implementation of program for capacity building of personnel in charge of extension services with focus laid on intensification of extension services. Acquisition of technologies is proposed at the headquarters of CREA through training method, which enables to implement empowerment project of human resources targeting a number of CREA's personnel in charge of extension services. This attempt shall be a project-type one and invitation of specialists

from external source is recommended. As an alternative it may be proposed that the beneficiaries in c – 1 mentioned above should play a role to give lessons and directions at training course of CREA, in view of contributing to upgrading in extension technologies. Nevertheless, because empowerment of CREA’s personnel in charge of extension services is considered to be the most important component for bearing the fruits of the Master Plan and this project thereby should be put into implementation at the initial stage of the Master Plan. Invitation of relevant specialists outside CREA is desirable accordingly.

(4) Implementation of the Project

Major action plan of CREA is as follows.

Table: Action Plan of CREA

Modernization of existing facilities	<ul style="list-style-type: none"> • Intensification of construction machinery: Improvement of repairing system and operation system • Rehabilitation of existing facilities: Replacement of equipment and materials, rehabilitation of buildings, empowerment of human resources
Capacity building of personnel	<ul style="list-style-type: none"> • Extension technologies to be rendered in parallel with pilot projects: Implementation of extension activities through pilot projects, extension of crops cultivation system, preparation and distribution of various technical manuals, encouragement and empowerment of farmers’ organization. • Analysis of actual situation of problems relevant to instruction/training of technical assistance method: Preparation of lesson materials for training, holding training course and technical seminar.
Effective utilization of farms	<ul style="list-style-type: none"> • Expansion on production of seedlings • Improvement of technical assistance on cattle farming • Improvement of technical assistance on cultivation of fruits

6.3.5.2 Project: Functional Strengthening of INIAP

(1) Actual Situation of Target Areas and Rationale for Implementation of the Project

Similar to CREA, INIAP is anticipated to play an essential role in implementation of the Master Plan. INIAP shall be responsible for research on experimental method for cultivation, research on cultivation technologies and production and supply of improved seeds and shall play a central role in implementation of improvement program for agriculture and livestock sector. INIAP’s responsibilities cover at present research and development on agriculture-related technologies, provision of extension services of farming technologies and production and sale of improved seeds, but these services are not rendered in satisfactory manner due to limited allocation of budget, like the case of CREA; in particular, deficit in equipment and materials for research and experiment and inferior productivity of improved seeds stand out. Improvement in function of the Bullcay Experimental Station and the Chuquipata Experimental Station is thus anticipated. It is also proposed to upgrade and to raise efficiency of extension services comprising supports to extension services to the agricultural sector under Farmers/Farmers’ Association Supporting Program presented in the Master Plan.

INIAP supports directly to small and marginal farmers through improvement of varieties of crops, research on crops cultivation method, production and distribution of improved seeds, etc. and this institution, together with CREA, plays an important role for enhancement of destitute conditions of small and marginal farmers. INIAP, an affiliated institution of the Ministry of Agriculture, is an organization in charge of research and development of technologies and is equipped with research facilities at various sites throughout the country; the target area of the Master Plan has two INIAP’s station, one is the Chuquipata Experimental Station which is in charge of in-house experiment and research at laboratory and production of hybrid varieties and seeds of plants and the other is the Chuquipata Experimental Station which undertakes to produce improved seeds of grains and other crops. Apart from these two stations, additional supports from other stations may be expected, because INIAP develops research and development tasks throughout the country.

On the other hand, INIAP has a plentiful experience in conducting bilateral cooperation projects and projects in collaboration with international aid agencies, which has contributed the institution to accumulation of a wealth of technologies and know-how. Farmers within target area of the Master Plan are not in a position to introduce improved seeds and advanced cropping technologies of INIAP by their own efforts because of their destitute condition. Meanwhile, INIAP is willing to participate in development projects because operation of the organization depending on nothing but the budget allocated by the central government faces difficulty. Therefore, INIAP does not provide supports to the areas alienated from development projects.

(2) Beneficiaries and Target Areas

This project seeks to upgrade the services of INIAP relevant to supports to small and marginal farmers by means of enhancement of research and development capability on cropping technologies and managerial capability for implementation of development projects. At the Bullcay Experimental Station, it is projected to launch on research, production expansion and extension on beans as crops to be consumed locally, Andean fruits as cash crops and *cuys* as small animals; besides, research on Vasconceiro enzyme, a specific product in Andean Region, is underway.

INIAP shall take part in the sub-programs of Upgrading of subsistence-oriented agro-products, Elevation in farm income and Support to cash crop production of the Master Plan and shall be responsible in these sub-programs for provision of extension services relevant to crops cultivation and production, distribution of seeds, being anticipated to play an important role for the progress of these sub-programs. Under the circumstances, in view of disseminating the fruits stemmed from research and extension activities to farmers, the present project for Function strengthening of INIAP shall comprise: (1) Support to research activities as a project, (2) Strengthening of productive activities for distributing improved seeds to small and marginal farmers, and (3) Strengthening of the project for distribution of improved seeds for small and marginal farmers.

Table: Profile of INIAP's Support, Extension and Technical Assistance Services

Projects	Profile of INIAP's Support, Extension and Technical Assistance Services
Improvement of Agriculture and Livestock Sector	
Upgrading of subsistence-oriented agro-products	Production and distribution of hybrid seeds, Examination on seeds, Distribution to seed bank, Research and technical assistance on crops cultivation and application of fertilizers/agro-chemicals, Research and technical assistance on cultivation technologies with input of organic fertilizers.
Raising of farmer's income	Establishment of cuy production/rearing center, Installation of feed production farm, Establishment of extension center, Technical assistance on quality control of cuy and tree tomato, Research and technical assistance on compound feeds, Technical assistance on processing and marketing of cuy, Distribution of farm inputs, Planning and coordination of technical assistance implementation program.
Support to cash crops	Technical assistance on cultivation of proposed crops, Technical assistance on construction of cultivation facility, Support relevant to access to micro-credit system.
Functional strengthening of INIAP	Improvement of existing facilities, Review on administration system, Replacement of equipment and materials, Review on subjects of research

(3) Profile of the Project

For supporting respective project proposed in the Master Plan, this project shall comprise such components as improvement of existing facilities, functional strengthening of research and investigation sections and capacity building of personnel so that technical assistance and extension services to beneficiaries may be enhanced.

a. Improvement of existing facilities

Due to deficient provision of equipment and tools for experiment activities at the experiment stations under jurisdiction of INIAP, there is the possibility the research on some kinds of technologies which are highly anticipated by local farmers should not be conducted; particularly, the stations are not equipped with necessary equipment and tools for proceeding with such advanced

technologies as pasteurized cultivation, culture technology at growing point, etc. are indispensable technologies for research on production of improved seeds and saplings (Equipment and tools for culture technology at growing point were donated by the Embassy of Japan under Grass-Root Grant-Aid Program).

On the other hand, lack of multi-functional greenhouse for production of seeds and saplings and obsolete condition of agricultural machinery at experimental farms constitute another constraint for INIAP to undertake research and development of technologies depending on more advanced technologies and on more effective manner. Therefore, an improvement of existing facilities of INIAP is a pressing agenda for the Master Plan.

b. Strengthening of experimental stations

In parallel with improvement of existing facilities, strengthening of INIAP's experimental station shall be conducted. The provisional headquarters of INIAP in Azuay and Cañar is located at the Bullcay Experiment Station in which a total of 9 research workers are stationed and some engineers are engaged in specific projects.

A list of candidate projects which have been forged by INIAP and applied for Ministry of Agriculture is given below.

- Project for improvement of productive system, improvement of varieties and transfer of technologies, marketing and credit (*chirimoya, babaco*, beneficial insects, Andean fruits, Andean vegetables, beans, etc.)
- Project for distribution of improved seeds for raising productivity of corn
- Research on raising method of *cuy* by sub-region
- Project for structuring of integrated management system of INIAP's projects

Research workers of INIAP are capable of coping with the technical subjects of the projects implemented by INIAP, but recruiting of specialists and empowerment of these research workers are necessitated to deal with cutting-age technologies to be introduced. In this connection, it is proposed in this Master Plan to invite specialists from external sources as well as to receive supports from volunteer groups endowed with specific technologies for attainment of capacity building of INIAP.

c. Strengthening of extension services

So as to maximize the capability of INIAP for supporting small and marginal farmers, INIAP's extension services shall be strengthened. It was proved through implementation of the pilot projects that INIAP was able to render high standard of extension services and are capable of supporting small and marginal farmers for long time, owing to accumulated technologies and know-how to date. Nevertheless, coverage area of INIAP's support is limited because of its smaller structure; in addition, because production of improved seeds is depressed, benefitable farmers are also limited. In the light of such situation, expansion of physical structure and enhancement of extension efficiency are required. The present Master Plan proposes to strengthen extension and training system of INIAP to meet expansion in agricultural and livestock farming, to prepare technical manuals aiming at enhancement of extension efficiency, etc..

(4) Operation of the Project

Proposed activities are, but not limited to, as follows:

a. Administration of cultivation technologies

- Technical assistance on fertilization method and soil management technology
- Technical assistance on production of improved varieties (potato, corn, beans, etc.)
- Technical assistance on cultivation technology of Andean fruits and preservation method

- of original seeds
 - Preparation of technical manuals for the technical assistances mentioned above
- b. Extension services
- Implementation of improved seeds distribution activities through demonstration farming
 - Extension of crops cultivation technologies to be developed
 - Preparation and dissemination of various technical leaflets
 - Empowerment and strengthening of farmers' association
- c. Training
- Analysis on prevailing constraints on training
 - Preparation of materials for training
 - Holding training course and seminars on technical subjects

6.4 Improvement of Financing System

6.4.1 Provision of Micro-Credit

Provision of micro-credit is envisaged in the following activities related with the development component: "Improvement of Agricultural and Livestock Sector "

- Upgrading of self-sufficiency-oriented agro-products (Procurement of seeds for potato, corn, broad bean, kidney pea, barley, peas, etc. preparation of farmland, procurement of farm inputs: fertilizers, agro-chemicals and agricultural machinery and equipment and installation of seeds storage)
- Raising farmer's income (Introduction of combined farming: raising of small animals and cultivation of cash crops, procurement of breeding species, construction of barn, irrigation system, preparation of farmland, procurement of seedlings for cash crops, sowing and storage)
- Improvement of milk productivity among marginal cattle farmers (Improvement of grazing land, installation of fence equipped with electric wire, procurement of agricultural machinery and equipment and materials and equipment for sanitary control of cattle, installation of silo, vaccination, etc.)

It is proposed that farmers' associations should establish a joint agency for administration of project fund or entrust administration of project fund to existing financing agency. After deciding the agency for administration of project fund, farmers' associations shall launch on preparation of project implementation plan and disbursement plan of fund needed for application of fund, under guidance of public supporting agencies. Subject to review and approval on application form by public supporting agencies and the agency for administration of project fund, the agency for administration of project fund shall proceed with application for transfer of fund to financing agencies. The said agency for administration of project fund in collaboration with public supporting agencies shall render technical assistance on preparation of project implementation plan, disbursement plan of fund and operation of fund and shall establish supporting system for this task. The association shall bear mutual responsibility for provision of micro-credit to its affiliated members and reimbursement of fund from members. Proposed amount of micro-credit per beneficiary shall not be larger than US\$ 1,000, but shall be decided taking the reimbursement ability of each beneficiary into account. The following chart illustrate the flow of fund for micro-credit.

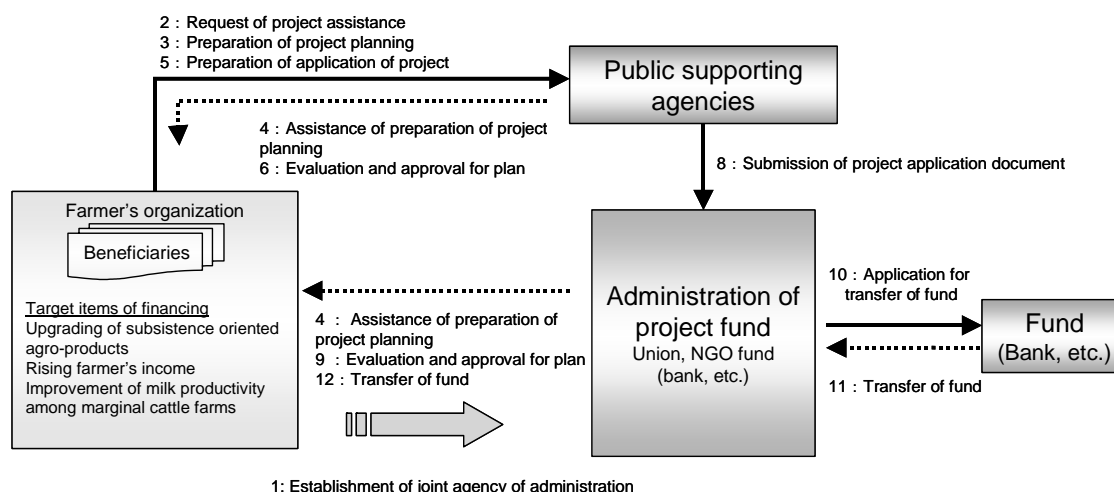


Figure: Procedure to be taken for Application of Micro-Credit

6.4.2 Finance to Entrepreneurs

Finance to entrepreneurs is envisaged in the following projects related with the components: “Improvement of Agricultural and Livestock Sector” and “Activation of Non-agricultural Industries”.

- Support to cash crops (Seedlings for introduced cash crops, land preparation, irrigation system, sowing and renovation of warehouse, etc.)
- Encouragement of agro-products processing industry (Procurement of materials and equipment, construction of building, procurement of transportation means, installation of storage, design and supervision cost, etc.)
- Encouragement of dairy products processing industry (Procurement of materials and equipment, construction of building, procurement of transportation means, design and supervision cost, etc.)
- Improvement for marketing of dairy products (Procurement of materials and equipment, construction of building, procurement of transportation means, installation of cooperative marketing facilities, design and supervision cost, etc.)
- Encouragement of rural handicrafts manufacturing industry (Procurement of materials and equipment, construction of building, procurement of transportation means, establishment of antenna shop, design and supervision cost, etc.)

Eligible beneficiaries of this attempt shall be small-scaled enterprises operated by farmers’ associations. As the case of the provision of the micro-credit, an agency for administration of project fund shall be established under guidance of public supporting agencies and this agency shall be responsible for examination on whether an applicant for finance has enough mortgage or not and whether an applicant for finance has prepared disbursement plan or not. After approval on project implementation plan and disbursement plan of fund, the agency shall proceed with application for finance to financing agencies and then undertake provision of fund to applicants. Public supporting agencies shall provide supporting services with input of personnel to be benefited by relevant capacity building project. The ceiling amount of finance in this attempt shall be US\$ 100 thousand per applicant

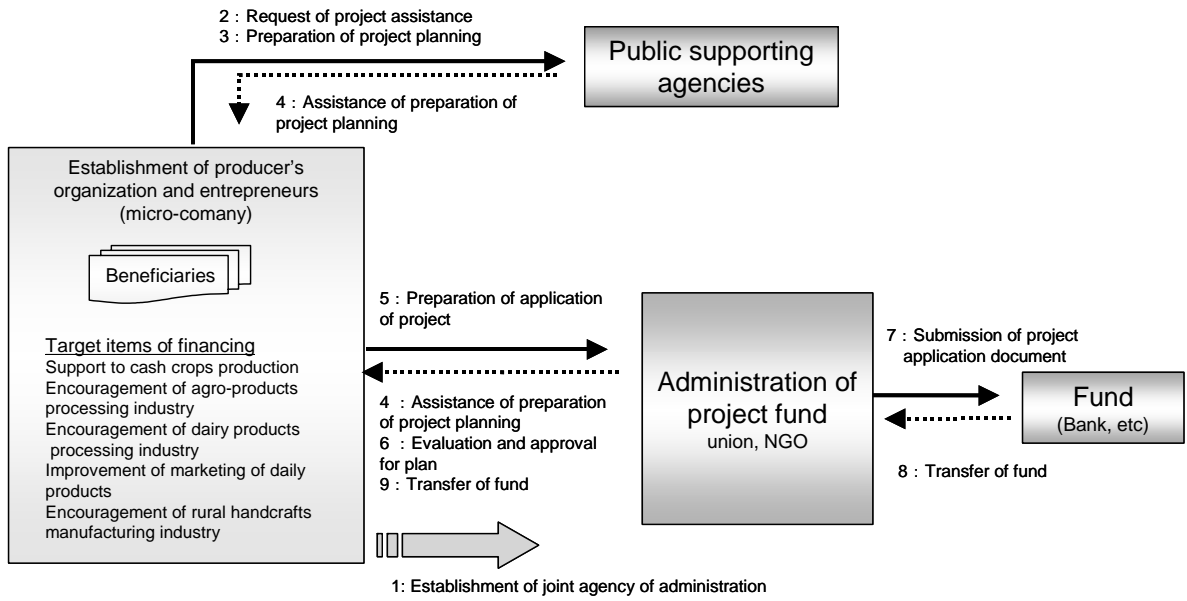


Figure: Finance to Entrepreneurs

PROJECT IMPLEMENTATION PLAN

CHAPTER 7

STUDY ON DEVELOPMENT FOR REACTIVATION
OF PRODUCTIVITY AND POVERTY REDUCTION
IN THE CENTRAL-SOUTHERN REGION
OF THE REPUBLIC OF ECUADOR

- FINAL REPORT -

August, 2005

CHAPTER 7 PROJECT IMPLEMENTATION PLAN

7.1 Project Structure and Implementation Plan

Details of the necessary development component for poverty mitigation in the region and projects for its attainment are described in Chapter 6 of this report. This chapter will discuss project implementation plan, project structure, cost allocation among stakeholders and their financial sources.

7.1.1 Structure of the Poverty Mitigation Project

The development components of the Master Plan for poverty mitigation in the zone and the projects to achieve the objectives of said components are summarized below.

Table: Structuring of Projects

Development Components	Project	Project Structure	
1. Farming Development	1.1 Staple Food Production Improvement	<ul style="list-style-type: none"> • Selection of improved seeds and supply of seed for production • Establishment of a seed bank 	<ul style="list-style-type: none"> • Production activities using improved seeds • Strengthening of diffusion activities • Micro credit
	1.2 Income increase for farmer families	<ul style="list-style-type: none"> • <i>Cuy</i> breeding center for distribution to be propagated • Establishment of a producers association • Production activities using the distributed material 	<ul style="list-style-type: none"> • Balanced food production and collective facilities for processing and selling • Strengthening of diffusion activities • Micro credits
	1.3 Micro-farming Milk Production Volume Increase	<ul style="list-style-type: none"> • Establishment of a producers association • Strengthening of diffusion activities 	<ul style="list-style-type: none"> • Improvements in milk production • Micro credit
	1.4 Support for products to be marketed	<ul style="list-style-type: none"> • Strengthening of diffusion activities • Production improvement of products to be marketed 	<ul style="list-style-type: none"> • Micro-credit
	1.5 Improvement of dairy products commercialization routes	<ul style="list-style-type: none"> • Establishment of a cooperative • Habilitation of commercialization routes 	<ul style="list-style-type: none"> • Credit for entrepreneurs
2. Reactivation of the Non-farming Sector	2.1 Promotion of Agro industrial Processing	<ul style="list-style-type: none"> • Support to entrepreneurial activities • Entrepreneurs financing 	<ul style="list-style-type: none"> • Support for projects management
	2.2 Fostering of Dairy Products	<ul style="list-style-type: none"> • Establishment of a cooperative • Support to entrepreneurial activities • Product Improvement 	<ul style="list-style-type: none"> • Sales strengthening • Financing for new entrepreneurs • Micro credit
	2.3 Fostering of the rural zone handicraft.	<ul style="list-style-type: none"> • Micro-producers association • Support to regional enterprises 	<ul style="list-style-type: none"> • Micro credit
3. Habilitation of Basic and Production Infrastructure	3.1 Habilitation of agricultural production infrastructure	<ul style="list-style-type: none"> • Project identification and plan elaboration • Habilitation of construction equipment 	<ul style="list-style-type: none"> • Construction machinery, material for infrastructure habilitation • Maintenance of construction equipment
	3.2 Habilitation of roads, schools, health centers	<ul style="list-style-type: none"> • Acquisition of material • Promotion of <i>Minga</i> participation 	
4. Environmental Conservation	4.1 Forestation Activities	<ul style="list-style-type: none"> • Habilitation of the seedling production center • Plan of seedling distribution 	<ul style="list-style-type: none"> • Protected areas reforestation plan • Productive areas reforestation plan
	4.2 Environmental Education	<ul style="list-style-type: none"> • Environmental education for farmers 	<ul style="list-style-type: none"> • Environmental education for young population
5.Reinforcement of Supporting Entities	5.1 CREA reinforcement	<ul style="list-style-type: none"> • Installation modernization plan • Farms effective use plan 	<ul style="list-style-type: none"> • Human resources capacity building plan
	5.2 INIAP reinforcement	<ul style="list-style-type: none"> • Installation remodeling plan 	<ul style="list-style-type: none"> • Plan of Investigation Reinforcement

7.1.2 Project Implementation Schedule

Projects of each component are to be implemented for attain the objectives of the Master Plan. For defining the project implementation schedule, due to the non-availability of the record of the previous budgetary arrangements of the allocated budget from the national government to CREA and assistances from foreign donors, the implementation of the project was decided as 15 years taking account of the term when improvement measures envisaged in the Master Plan shall maintain validity over benefited regions as well as presuming an average yearly investment const to be lower than twice as much as yearly budget of CREA, US\$ 7.0 million.

In compliance with the scenario of the Master Plan mentioned in section 4, the projects of upgrading of subsistence-oriented agro-products, raising farmer's income and improvement of milk productivity among marginal cattle farmers, included in the component of "Improvement of agriculture and livestock sector", are proposed to be started from the first year for implementation of the Master Plan; the projects of functional strengthening of public supporting organization and social and economic infrastructure are also scheduled to be started from the first year.

The projects of support to cash crops production and improvement for marketing of dairy products, both are included in the component of "Improvement of agriculture and livestock sector" shall be started from the 6th year and those envisaged in the component "Activation of non-agricultural sector" shall be started from 11th year of after completion of the said two projects. Meanwhile, the projects relevant to the component "Environmental conservation" are scheduled to be implemented in the course of the whole period of the Master Plan.

The implementation schedule of the projects and activities of project structures are described as chart below.

Table: Implementation Schedule

Program	Sub Program	Content	Año														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Improvement of agriculture and livestock sector	1.1 Upgrading of subsistence-oriented agro-products	Selection of improved seeds, distribution for production		■	■												
		Seed bank implementation		■	■	■											
		Production applying supplied input	▨	■	■	■	■	■	■	■	■	■	■	■	■	■	■
		Strengthening of diffusion activities		■	■	■	■	■	■	■	■	■	■	■	■	■	■
	1.2 Raising farmer's income	Cuy for reproduction breeding center to be distributed		▨	▨												
		Establishment of producers association		■	■												
		Production activity utilizing distributed materials	▨	■	■	■	■	■	■	■	■	■	■	■	■	■	■
		Production applying supplied input		■	■	■	■	■	■	■	■	■	■	■	■	■	■
		Organic fertilizer production, collective processing and sales		■	■	■	■	■	■	■	■	■	■	■	■	■	■
		Strengthening of diffusion activities		■	■	■	■	■	■	■	■	■	■	■	■	■	■
	1.3 Improvement of milk productivity among marginal cattle farmers	Establishment of producers association		■	■	■	■	■	■	■	■	■	■	■	■	■	■
		Improvement of milk production	▨	■	■	■	■	■	■	■	■	■	■	■	■	■	■
		Strengthening of diffusion activities		■	■	■	■	■	■	■	■	■	■	■	■	■	■
	1.4 Support to cash crops production	Crop improvement								■	■	■	■	■	■	■	■
		Strengthening of diffusion activities								■	■	■	■	■	■	■	■
	1.5 Improvement of dairy products commercialization	Establishment of producers cooperative							■	■	■	■	■	■	■	■	■
		Habilitation of commercialization routes							■	■	■	■	■	■	■	■	■
	Strengthening of diffusion activities							■	■	■	■	■	■	■	■	■	
2. Activation of Non-agricultural Sector	2.1 Encouragement of agro-products processing industry	Financing to entrepreneurs															
		Support to Project management															
	2.2 Encouragement of dairy products processing industry	Establishment of producers cooperative															
		Support to entrepreneurs activities															
		Improvement of product quality															
		Sales reinforcement															
	2.3 Encouragement of rural handicrafts manufacturing industry	Micro-producers association															
		Support to the regional economy															
		Handicraft reactivation															
		Strengthening of diffusion activities															
3. Upgrading living standard	3.1 Social and economic infrastructure development	Project identification and plan elaboration	■														
		Habilitation of construction machinery	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		Actividad de utilización de los Equipamientos		■	■	■	■	■	■	■	■	■	■	■	■	■	
		Material Supply		■	■	■	■	■	■	■	■	■	■	■	■	■	
		Incentive to participate in the Minga		■	■	■	■	■	■	■	■	■	■	■	■	■	
		Construction using supplied material and machinery	▨	■	■	■	■	■	■	■	■	■	■	■	■	■	
		Construction equipment operation and maintenance		■	■	■	■	■	■	■	■	■	■	■	■	■	
4. Environmental Conservation	4.1 Promotion of reforestation	Habilitation of seedling breeding ground	■														
		Seedling distribution plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		Protected areas reforestation plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		Productive areas reforestation plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	4.2 Strengthening of environmental education	Environmental education towards farmers	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		Environmental education towards young population	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
5. Functional strengthening of public supporting organization	5.1 Functional strengthening of CREA	Installations modernization plan	■														
		Plan for the effective utilization of farms	■														
		Personnel training	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	5.2 Functional strengthening of INIAP	Installations modernization plan	■														
		Plan of investigation strengthening	■	■	■	■	■	■	■	■	■	■	■	■	■	■	

▨ Using fund of 2KR

▨ Using fund of BID

■ Using other fund

7.1.3 Initiatives for the Project Actions

a. Beneficiaries' Burden

Beneficiaries shall be in charge of: (1); Devolution of micro-credits granted for the farmers in general and (2); loans made to entrepreneurs, (3); farmers' capital to invest, (4); Supply of work for the habilitation of basic and production infrastructure labor force by the *Minga*, to reactivate production activities and (5); social solidarity.

With the purpose of achieving sustainable development in the regions, the capital required for the production activities of the beneficiaries should be utilized in loans to them through the financing system and to be given back later. By the introduction of the project, *Minga* activities, traditionally practiced by the local population, shall be transformed from "work carried out through the *Minga* by initiative of the governmental entity" to a model where "the population decides and carries out activities by their own initiative".

b. Governmental Entity Burden

Governmental entity shall be in charge of the investments in: (6); Construction machinery acquisition, (7); Material acquisition, (8); Facility construction, (9); Technical assistance conducted by CREA and INIAP and (10); support to the activities of the regional government, municipalities, CREA and INIAP. The contents of the burden consists of: the public investment represented by procurement cost for construction equipment and materials required for development of infrastructure to be taken basically the initiative by beneficiaries and of the costs for technical assistance for implementation of projects and for supporting activities to be rendered to beneficiaries. Said capital should be included in CREA's yearly budget. In relation to the INIAP and regional and municipal government, it is necessary to adjust the projects scopes and schedules among others, to integrate all related projects.

Table: Components of Actions for Each Project

Development Component	Project	Shared By Beneficiary					Shared By Public Entities				
		Financing		(3) Farmers' capital to invest	Labor Delivery		Investment by governmental entities			Support for Activities	
		(1) Micro credit	(2) Financing to entrepreneur		(4) Minga Activities	(5) Social Solidarity	(6) machinery construction	(7) Supply of material supply	(8) Facility construction	(9) Technical assistance	(10) Activities support
1. Farming Development.	1.1 Staple Food Production	○		○		○				○	○
	1.2 Income increase for farmer families.	○		○		○			○	○	○
	1.3 Micro-farming Milk Production Increase.	○		○		○				○	○
	1.4 Support for products to market.	○		○		○				○	○
	1.5 Improving of dairy products commercialization routes.		○	○		○					○
2. Reactivation of the Non-farming Sector.	2.1 Promotion of Agro industrial Processing.		○							○	○
	2.2 Promotion of Dairy Products.		○								○
	2.3 Promotion of the rural zone handcraft.	○		○		○				○	○
3. Habilitation of Basic and Production	3.1 Habilitation of agricultural production infrastructure.				○		○	○		○	○
4. Environmental Conservation.	4.1 Forestation Activities.				○	○		○	○		
	4.2 Environmental Education.										○
5. Reinforcement of Supporting	5.1 CREA reinforcement.							○	○	○	
	5.2 INIAP reinforcement.							○	○	○	

7.1.4 Financial Source for Project Implementation

CREA and NIAP are belonging to the Ministry of Presidency and the Ministry of Agriculture respectively; hence the necessary budget for the project implementation shall be allocated from the superordinate agencies. It is available to obtain the financial assistances through the Ministry of Foreign Affairs of Ecuador from foreign donors like the World Bank, IDB or others.

Micro-credit for small scale farmers shall be prepared by the Government banks like the Ecuadorian Central Bank and others from the Ministry of Finance to finance to the organizations in charge of micro-credit to be established through the project.

Financial assistance for entrepreneur has to be handled by the private banks in cities and financing organizations managed by NGO.

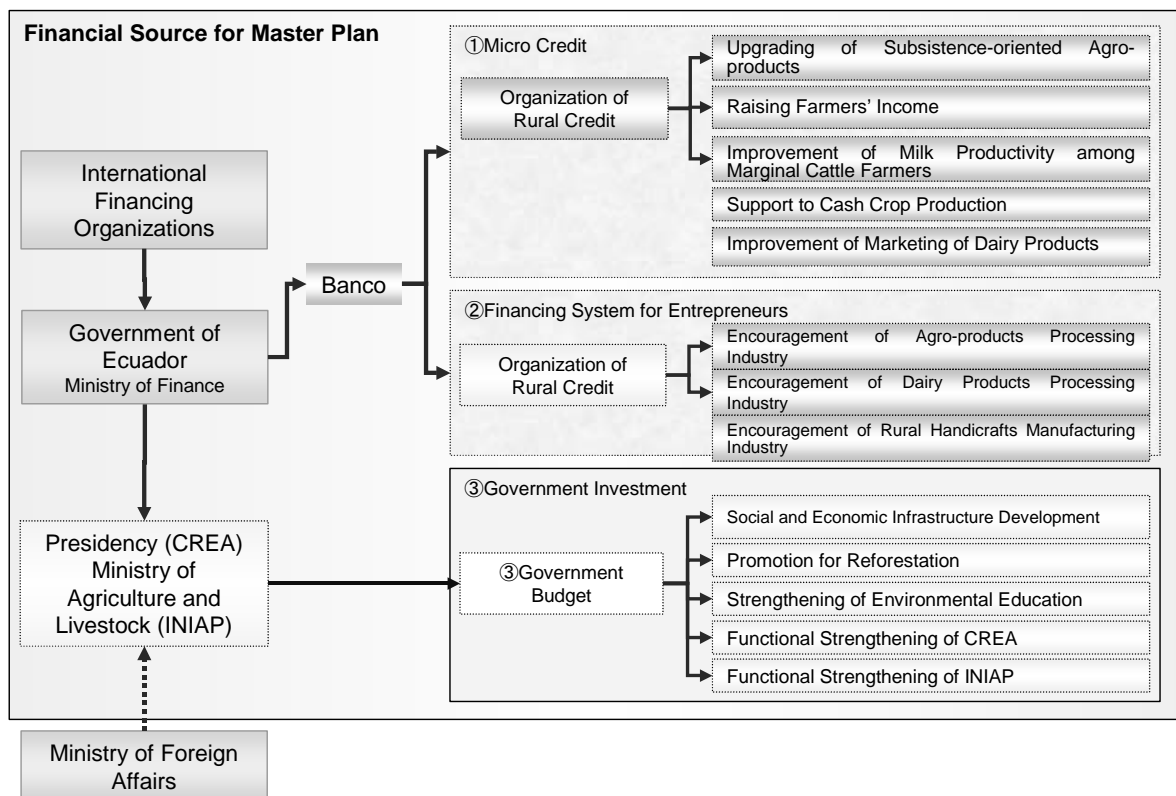


Figure: Budget Allocation Flow Diagram for Project Implementation

7.2 Project Cost

7.2.1 Project Cost By Structure of Projects

Projects nominated in the Master Plan are from considerations to become sufficient enough for handling within the present budgetary scale of the related agencies and financial burden of the participants to meet with their affordability. Hence it can be said that the repayment by the farmers is available to be owed by themselves. The total project budget is estimated as US\$20.693 million and US\$6.313 million is for the component of the "Improvement of agriculture and livestock sector". The component of the "Upgrading of living standard " shares US\$7.9 million on the other hand, which consists of US\$5.00 million for construction machinery procurement, US\$2.50 million for procurement for construction material and US\$0.40 million is for supports for activities. The details of the implementation costs of each project are shown below.

Table: Implementation Cost by Project Component

Project		Cost (US \$ X 1,000)	Structure of actions							
			Burden for the beneficiary			Burden for the governmental entity				
			Financing		Minga Activities	Government Investment			General Budget	
			Micro credit	Loan to entrepreneu rs		Constructio n machinery supply	Constructio n material supply	Installation construction	Technical Assistance	Support to activities
Farming Development	Staple Food Production Improvement	1,863	63			100	100	300	1,000	300
	Income increase for farmer families	1,730	30			100	300	100	1,000	200
	Micro-farming Milk Production Increase	1,620	520						1,100	
	Support for products to market	600	100						500	
	Improvement of dairy products commercialization routes	500							500	
	Sub-total	6,313	713	0		200	400	400	4,200	500
Reactivation of the Non-farming Sector	Promotion of Agro industrial Processing	500								500
	Promotion of Dairy Products	800							300	500
	Promotion of the rural zone handcraft	680	80							600
	Sub-total	1,980	80	0					300	1,600
Habilitation of Basic and Production Infrastructure	Habilitation of agricultural production infrastructure	7,900				5,000	2,500			400
	Sub-total	7,900		0		5,000	2,500			400
Environmental Conservation	Forestation Activities	200				100	100			
	Environmental Education	200							200	
	Sub-total	400				100	100		200	
Reinforcement of Supporting Entities	CREA reinforcement	2,800	793				900	1,400	500	
	INIAP reinforcement	1,300					1,000	300		
	Sub-total	4,100		0			1,900	1,700	500	
Total		20,693	6,400	0		5,300	4,900	2,100	5,100	2,500

Note. "Implementation cost" in the above includes Government's burden and the initial cost for micro-credits.

It seems that the budget preparation by project will become inefficient, hence it is anticipated that the disbursement is by project component. The followed table is summarized the implementation cost by project component. It will be available to conduct several projects in ahead while completing the budget preparation by the project component.

Table: Action Contents by Project Component and Amounts

Project Component	Action Contents	Amount (US\$)
Micro-credit	Initial investment cost is added to the implementation cost. Total financing for small-scale farmers and their organizations (US\$9,890,000).	793,000* ¹
Financing to entrepreneurs	Not added to as cost here, because applying ordinary financing. Total cost; US\$ 1,500,000 for assistance for entrepreneurs.	0* ²
Minga activities	Construction works of basic and productive infrastructure, reforestation actions.	0
Construction equipment supply	Procuring construction equipment	5,300,000
Construction material supply	Material for irrigation installation (around 2,500 ha)	2,000,000
	Material for local roads	400,000
	Material for rural water works	400,000
	Material for schools, health centers	200,000
	Material for CREA reinforcement (implements for tests)	900,000
	Material for INIAP reinforcement (implements for tests)	1,000,000
Installation construction	Installations construction for CREA reinforcement	1,400,000
	Installations construction for INIAP reinforcement	700,000
Technical assistance	Support for the elaboration of plans, technical assistance	5,100,000
Activities Support	Assistance for project management, support for reforestation actions.	2,500,000
Total		20,69300,000

Note. *1: Please refer to the box of the micro-credit project implementation cost.

*2: Please refer to the box of the entrepreneurs financing implementation cost.

Micro-Credit Project Component.

US\$793,000 is added to "Micro-credit", stating as "Initial investment cost is added to the implementation cost", while not adding the amount of US\$9,890,000, stating as "Total financing for small-scale farmers and their organizations".

The project cost is regared as investing funds from outside to projects in the present Master Plan. Hence micro-credit project cost is considered as fund from outside at the comencement of the credit.

Initial principal of the micro-credit is estimated as US\$793,000 and both of the primfcipla and the interest will be put into practice, hence the project cost for the micro-credit will be the said amount only.

Entrepurnor Financing Project Component

Due to stating "Not added to as cost here, because applying ordinary financing." "Total cost; US\$1,500,000 for assistance for entrepreneurs." In the above table, the whole cost is not added to the budget.

The project cost is regared as investing funds from outside to projects in the present Master Plan same as the micro-credit project component. Hence micro-credit project cost is considered as fund from outside at the comencement of the component.

The present component is going to apply the private financing ascheme and the practice is conducted out of the scope of the project. Hence the project cost will be the said amount only.

7.2.2 Financial Plan By Fiscal Year

Whole annual disbursment schedule is shown in the followed table. The number of applicant for micro-finance related projects is to be defined by the capacity of the budget scale as under the component of "Improvement of agriculture and livestock sector". The budget of the support to activities handled by the public entities is also allocated by the number of the beneficiaries.

The component of "Reactivation of the Non-farming Sector", which aims to assist farmers' organizations and enterpurnors is going to apply the private financing. Hence the scale of the project is to be defines by the number of the appraised project. For convinience sake, the number of the appraised project is assumed as level number and the required budget for the supputs for activities in the same line.

7.2.3 Farmer's Burden Per Household.

Most of the farmers in the Study Area are dealing with small scale agriculture and livestock farming under the poor geographic and socio-economic conditions. The present Master Plan aims to support them to improve their productivities and income. But it is clarified that the introduction of projects with large scale investment is difficult to implement.

Hence the total burden per one household is defined less than US\$300 per year for the projects of "Staple Food Production Improvement", "Income increase for farmer families" and "Habilitation of Basic and Production Infrastructure", which are scheduled to be commenced in the initial stage of the present Master Plan.

Table: Household Based Burden by Project and the Number of Beneficiary

Project Title	Beneficiary (Household)	Av. Burden (US\$/Family)	Supprt activity (US\$/Family)	Type of Fund
1. Farming Development.				
1.1 Staple food production	10,000	209	130	Micro-credit
1.2 Income increase	3,000	300	133	Micro-credit
1.3 Micro-farming milk Produc'n	10,000	260	550	Micro-credit
1.4 Support for marketing	1,000	500	500	Micro-credit
1.5 Commercialize dairy products	200	2,500	250	Private finance
2. Reactivation of the Non-farming Sector.				
2.1 Agro industrial Processing	200	2,500	2,500	Private finance
2.2 Dairy Products	200	2,500	4,000	Private finance
2.3 Handcraft	2,000	200	300	Micro-credit
3. Habilitation of Basic and Production Infrastructure				
3.1 Habilitation of agricultural production infrastructure	3,900	0	103	Minga activity
4. Environmental Conservation Strengthening of Supporting Entities				
4.1 Forestation Activities	—	0	—	Minga activity
4.2 Environmental Education	—	0	—	Non
5. Reinforcement of Supporting Entities				
5.1 CREA reinforcement	—	0	—	Non
5.2 INIAP reinforcement	—	0	—	Non

Note. The details of the above estimation is to be referred to "Implementation Program" in Chap. 7.

7.2.4 Source of Finance

Basically the Master Plan should be implemented with funds allocated from the national budget from the Government to CREA, INIAP and local governments. Besides that, it is necessary to actively seek foreign financing.

As shown in the table below, bi-lateral and multi-lateral schemes are there as foreign assistances. So CREA and INIAP are available to request through the Ministry of Foreign Affairs through the Ministry of Presidency and Ministry of Agriculture respectively in case of applying those foreign assistances, while referring to the application scopes and conditions of assistance.

Technical assistances and financial assistances from foreign donors to Ecuadorian Government are summarized in the followed table.

Table: Financing Sources by Project Component

Project Component	Budget (x US \$ 1,000)	Internal Budget			External Budget								
		CREA	INIAP	Local Government	Bilateral Cooperation					Multilateral cooperation			
					Donations			Disbursable Cooperation		BID	CAF	BM	
					Technical Cooperation	Donations	Donation by Foundations	Agreement between countries	Funds by countries				
Micro credit	793	○							⊙	○	○	○	○
Financing to entrepreneurs	0	○							○	○	○	○	○
<i>Minga</i> Activities	0												
Acquisition of construction machinery	5,300	○								○	○	○	○
Construction material acquisition	4,900	⊙		⊙						○			
Installation Construction	2,100	⊙	⊙							○	○	○	○
Technical assistance	5,100	⊙	⊙	○	○								
Support to activities	2,500	⊙		○	○								
Total	20,683												

⊙ : Under procedure ○ : With possibilities

Table: Applicable Technical Assurances and Financial Assurances from Foreign Donors

Major Foreign Donors		Technical Assistance	Financial Assistance	
			Grant	Loan
U.N	IFAD - International Fund for Agricultural Development			○
	FAO - Food and Agriculture Organization of the United Nations	○		
	UNEP - United Nations Environment Programme	○	○	○
World Bank	IBRD - International Bank for Reconstruction and Development			○
	IFC - International Finance Corporation			○
Regional Development Bank	IDB - Inter-America Development Bank			○
	IIC - Inter-America Investment Corporation			○
	CAF - Corporacion Andina de Fomento			○
	EIB - European Investment Bank			○
Bilateral Assistance	USAID - Agency for International Development, USA.	○	○	
	USEXIM - US Export-Import Bank of the United States			○
	DFID - Department for International Development	○	○	○
	GTZ - Deutsche Gesellschaft Technische Zusammenarbeit GmbH	○	○	
	CIDA - Canadian International Development Agency	○	○	
	AFD - Agence Francaise de Development	○	○	○
	NBP - Natexis Banques Populaires			○
	Mediocredito - Mediocredito Centrale S.p.A – Istituto Centrale per il Credito a Medio Termine S.p.A.			○
	Sida - Swedish International Development Cooperation Agency	○	○	
	SEK - AB Svensk Exportkredit			○
	NIO - De Nederlandse Investeringsbank Voor Ontwikkelingslanden NV	○	○	○
	OKB - Oesterreichische Kontrollbank AG			○
	ICO - Instituto de Credito Oficial			○
	DUCROIRE/DELCREDERE - The Belgian Export Credit Agency			○
	JICA - Japan International Cooperation Agency	○	○	
JBIC - Japan Bank for International Cooperation			○	
EU AID - European Agency for International Development	○	○		

Note: Grant Aid Assistance of JICA is dealt with the Ministry of Foreign Affairs, Japan.

7.3 Project Implementation System

While the projects are to be implemented based on participatory approach with farmers' involvement, it has to be established structure consisting of INIAP, Provincial Government, municipality, University, NGO and others led by CREA on the Government side.

Projects under the Master Plan are promoted under consideration of farmers' geographical and socio-economic conditions and grades of their lives. CREA will owe tasks of technical and organizational aspect, INIAP for improving agricultural management aspects. Municipality and the provincial governments will owe the tasks of extension services, public awarenesses, financial assistance for material procurement and administrative cares.

Table: Implementation System

Development Component		CREA	INIAP	Gob.local	Munic.	Univers	Financial Entity	NGO
Project								
Project Structure								
1. Farming Development	1.1 Improvement of Staple Food Production							
	Selection of improved seeds, distribution for production		○					
	Seed bank implementation	○	○		○			
	Production applying supplied input	○	○		○		○	
	Strengthening of diffusion activities		○		○	○		○
	1.2 Increase in farmer families income							
	Cuy for reproduction breeding center to be distributed		○					
	Establishment of producers association		○		○			
	Production applying supplied input	○	○		○		○	
	Organic fertilizer production, collective processing and sales	○			○			
	Strengthening of diffusion activities		○		○	○		
	1.3 Milk Production increase by micro-producers							
	Establishment of producers association	○			○			
	Improvement of milk production	○			○			
	Strengthening of diffusion activities	○			○			
	1.4 Support for products to be marketed							
	Crop improvement		○					
	Strengthening of diffusion activities		○					
	1.5 Improvement of dairy products commercialization							
	Establishment of producers cooperative	○			○			
	Habilitation of commercialization routes	○			○			○
Strengthening of diffusion activities	○			○				
2. Reactivation of the Non-Farming Sector	2.1 Fostering of agro industrial Processing	○						
	Support to entrepreneurs activities	○						
	Support to Project management	○				○		○
	2.2 Promotion of Dairy Products							
	Establishment of producers cooperative	○						
	Support to entrepreneurs activities	○						
	Improvement of product quality	○				○		
	Sales strengthening	○						
	2.3 Promotion of handicraft at rural zones							
	Micro-producers association	○						
	Support to the regional economy	○						○
Handicraft reactivation	○						○	
Strengthening of diffusion activities	○						○	
3. Habilitation of basic & irrigation infrastructure	3.1 Basic and agricultural production infrastructure							
	Project identification and plan elaboration	○						
	Habilitation of construction machinery	○		○				
	Acquisition of materials	○		○				
	Material Supply	○			○			
	Incentive to participate in the Minga	○				○		○
	Construction using supplied material and machinery	○		○	○			
Construction equipment operation and maintenance	○							
4. Environmental Conservation	4.1 Reforestation activities							
	Habilitation of seedling breeding ground	○		○				
	Seedling distribution plan	○		○				
	Protected areas reforestation plan	○		○				
	Productive areas reforestation plan	○						
	4.2 Environmental Education							
	Environmental education towards farmers	○				○		○
Environmental education towards young population	○				○		○	
5. Strengthening of supporting entities	5.1 CREA strengthening							
	Installations modernization plan	○						
	Plan for the effective utilization of farms	○						
	Personnel training	○						
	5.2 INIAP strengthening							
	Installations modernization plan		○					
Plan of investigation strengthening		○						

Annex: Project Implementation Program

This reference is prepared the details of project implementation plans which are discussed in Chapter 6 of this report. Major contents here are supporting information of annual disbursement schedule and estimated implementation cost by project mainly. Table of contents is provided as below.

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1 Component; Farming Development

1.1 Improvement of Staple Food Production

Item	Contents	Explanation
1. Executing Entity	Farmers Organization	
2. Supporting Entities	INIAP, CREA	Municipalities, Universities, Public Financial Entities, NGOs.
3. Beneficiaries	Farmers (10,000 families)	
4. Entities to be reinforced	INIAP (technical activities – diffusion activities)	Installations related to seedling production
5. Implementation Period	10 years	
6. Capital		
By the total micro credit beneficiaries	US\$ 2,090,000	Obs.) 1.
Micro credit financing for 1 st year	US\$ 63,000	Obs.) 2.
Governmental entity	US\$ 1,800,000	Obs.) 3
Project cost	US\$ 1,863,000	=Government costs + investment on micro credit for 1 st year
Total cost of activities	US\$ 3,890,000	=Total of micro credits + government costs
7. Financing		
Beneficiaries	Micro-credits	Evaluation of the devolution method according to the conditions of the zone
Government	Ordinary budget of the nation	
8. Financing Plan	Ordinary budget of the nation	Search for foreign financial aid.
9. Implementation Method	Installation of seed bank	Installation of a seed bank and cultivation of improved seeds in 50 ha plots to start seed production.
	Production increase with improved seeds (technical assistance)	Amplification to 750 ha in the next year, system of improved seeds distribution and recollection by the seed bank.
	Activities of diffusion to farmers (management support)	
	Micro-credits	Seed bank loans for fertilizers, planting, among others (Obs 1)
10. Cost of the project per family	US\$ 209	Average investment per family
	US\$ 130	Cost of support activities per family (Obs 3)

This project will finish in 10 years. The first year it will benefit 300 families and it is estimated that in 10 years, 10,000 families will be benefited. Each family will improve productivity of 1 ha. And of the 120,000 ha that are presently cultivated, 10,000 ha. will be improved. During the 1st year, micro credits of a total of US\$ 62.700 will be conceived for 300 farmers' families (An average of US\$ 209.00 per family) and the families will pay back 30% of interest in the manner of improved seeds to the seed bank, widening and maintaining the credit capital. After 5 years, the initial capital will be recovered and later, the remaining capital will be utilized to warranty new credits, expanding the project subsequently.

Obs.) 1 The content and amount of the obligations for the 10,000 farmers families are detailed in the following table.

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Corn crop	4.200ha	US \$ 200/ha	US\$ 840.000
Potato crop	500ha	US \$ 300/ha	US\$ 150.000
Beans crop	3.200ha	US \$ 200/ha	US\$ 640.000
Broad bean crop	1.700ha	US \$ 200/ha	US\$ 340.000
Pea crop	200ha	US \$ 200/ha	US\$ 40.000
Others	200ha		US\$ 80.000
Total	10.000ha		US\$ 2.090.000
Amount of investment per family	1,0 ha		US\$ 209, 00 por familia

The estimated amount of credit is calculated considering (volume/5) x (estimated expense)

Obs.) 2 Initial and annual investment amount for the project and operative capital (US\$ x 1000)

Year	1	2	3	4	5	6	7	8	9	10	Total
No. Beneficiaries	300	400	500	650	850	800	1.050	1.350	1.800	2.300	10.000
Initial annual income	63					Pay back					
Financing	63	84	105	136	178	167	219	282	376	480	2.090

Obs.) 3 The input from the government entity is detailed in the following table.

Structure of the project by budget		Cost of the project	Content
Public Investment	Procurement of construction machinery	US\$100.000	For production of improved seeds
	Procurement of construction material	US\$100.000	For production of improved seeds
	Construction of facilities	US\$300.000	For production of improved seeds
	Subtotal	US\$500.000	
Cost of supporting activities	Asistencia técnica	US\$1.000.000	Supporting costs, mainly from CREA and INIAP
	Apoyo a Actividades	US\$300.000	Cost of activities, mainly from the regional government and municipalities
	Subtotal	US\$1.300.000	US\$130 per family
Total		US\$1.800.000	Government investment

1.2 Increase in Farmers' Families Income

Item	Contents	Explanation
1. Executing Entity	Farmers Organization	
2. Supporting Entities	INIAP, CREA	Municipalities, Universities, Public Financial Entities, NGOs.
3. Beneficiaries	Farmers (3,000 families)	
4. Entities to be reinforced	INIAP (Diffusion activities)	Construction of the <i>cuy</i> breeding center
5. Capital		
By the beneficiaries	US\$1,700,000	Obs.) 1.
Governmental entity	US\$1,700,000	Obs.) 2.
Total	US\$ 3 400,000	
6. Financing		
Beneficiaries	Association financing system	Devolution through selected <i>cuy</i> s produced
Public Entity	Ordinary general budget	
7. Financing Plan	Ordinary general budget	Search for foreign financial aid
8. Implementation Method		
	Installation of the <i>cuy</i> breeding center	
	Establishment of the producers association (management support)	
	Start of production with distributed input (technical assistance)	
	Balanced food production and <i>cuy</i> collective processing and sales (technical assistance and management support)	
	Reinforcement of diffusion activities	Project directed to INIAP

Obs.1) Increase in farmers families income shall be considered for 5 years and in each Canton an average of 5 cooperatives shall be established totaling 100 cooperatives conformed to execute the project. Financing to conform each cooperative shall be through micro-credits. In the first year 1/3 of the beneficiary farmers shall receive loans to build the breeding facilities and they will start to pay back. The actual pay back shall be the capital of loans provisions for new beneficiaries to build the breeding facilities. In the project it has been planned that in 5 years all beneficiaries shall be attended. The required amount of capital is shown below.

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
1) Construction of <i>cuy</i> breeding facilities	3,000 families	US\$ 1,000/facility	US\$ 1,000,000
2) Expenses to plant tree tomato	900 ha	US\$ 500/ha	US\$ 150,000
3) <i>Cuy</i> food	3,000 families	US\$ 150/familias/año	US\$ 150,000
Production of balanced food and installation for the collective <i>cuy</i> processing and sales	20 places	US\$ 20,000	US\$ 400,000
Total	3000 families		US\$ 1,700,000

The estimated necessary amount for credits are calculated (volume/3) x estimated expenses

Obs) 2. Content of input from the governmental entity

Project Component	Project Expenses	Content
Construction equipment supply	US\$ 100,000	Construction of <i>cuy</i> breeding facilities, expenses for the production of selected fruit seedlings to be distributed.
Construction material supply	US\$ 300,000	Construction of <i>cuy</i> breeding facilities, expenses for the production of selected fruit seedlings to be distributed.
Installation construction	US\$ 100,000	Construction of <i>cuy</i> breeding facilities, expenses for the production of selected fruit seedlings to be distributed.
Technical assistance	US\$ 1,000,000	—
Support in activities	US\$ 200,000	—
Total	US\$ 1,700,000	

1.3 Milk production increase by micro-producers

Item	Contents	Explanation
1. Executing Entity	Farmers organization	
2. Supporting Entities	CREA	Municipality
3. Beneficiaries	Farmers (2,000 families)	
4. Entities to be reinforced	CREA (technical orientation, diffusion activities)	
5. Capital		
By the beneficiaries	US\$ 1,300,000	Obs). 1
Governmental entity	US\$ 1,100,000	Technical assistance expenses
Total	US\$ 2,400,000	
6. Financing		
Beneficiaries	Micro-credit	
Public Entity	Ordinary budget	
7. Financing Plan	Ordinary budget	Search for foreign financial aid
8. Implementation Method		
	Establishment of the producers association (management support)	
	Increase in milk production (technological assistance)	
	Reinforcement of diffusion activities to the farmers (management support)	
	Establishment of micro-credits	

Obs.1) The necessary amount for the increase in milk production by micro-farmers has been calculated for a period of 2.5 years.

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Improved pasture only	8,000 families	US\$ 200/ family	US\$ 800,000
Installation of electrical fence, pasture improvement	2,000 families	US\$ 500/ family	US\$ 500,000
Total			US\$ 1,300,000

The estimated necessary amount for credits are calculated $(\text{volume}/2) \times \text{estimated expenses}$

1.4 Support for Products to be marketed

Item	Contents	Explanation
1. Executing Entity	INIAP	
2. Supporting Entities		Municipality
3. Beneficiaries	Farmers (1,000 families)	
4. Entities to be reinforced	INIAP (technical orientation, diffusion activities)	
5. Capital		
By the beneficiaries	US\$ 500,000	Obs.) 1.
Governmental entity	US\$ 500,000	Technical assistance expenses
Total	US\$ 2,400,000	
6. Financing		
Beneficiaries	Micro-credit	
Public Entity	Ordinary budget of the nation	
7. Financing Plan	Ordinary budget	Search for foreign financial aid
8. Implementation Method		
	Reinforcement of diffusion activities to the farmers (management support)	
	Establishment of micro-credits	

Obs.) 1 Support of products to be marketed shall be for tree tomato, babaco and mulberry among other Andean fruits. Said products shall improve their competitiveness, thus loans for a period of five years shall be necessary for the planting.

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Andean fruits	1000 ha	US\$500 /ha	US\$ 500,000

1.5 Improvement of dairy products commercialization

Item	Contents	Explanation
1. Executing Entity	Farmers association	
2. Supporting Entities	CREA	Municipality, ONG
3. Beneficiaries	Farmers (200 families)	
4. Entities to be reinforced	CREA (technical orientation, diffusion activities)	
5. Capital		
By the beneficiaries	US\$ 500,000	Obs.) 1.
Governmental entity	US\$ 500,000	Technical assistance expenses
Total		
6. Financing	Ordinary budget	
Beneficiaries	Ordinary budget of the nation	
Public Entity	Ordinary budget	Search for foreign financial aid
7. Financing Plan		
8. Implementation Method		
	Establishment of a storing cooperative (management support)	
	Habilitation of the commercialization system (management support)	
	Financing to entrepreneurs	

Obs.) 1. Beneficiaries of the present financing as well the estimated necessary amounts are as follows:

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Improvement of dairy products commercialization	20 enterprises	25,000/ enterprise	US\$ 500,000

2. Non-Farming Sector Reactivation

2.1 Promotion of agro industrial products processing

Item	Contents	Explanation
1. Executing Entity	Farmers Organizations- Enterprises	
2. Supporting Entities	CREA	Universities, NGO
3. Beneficiaries	Farmers Organizations- Enterprises (20 organizations)	AS the objective is the increase in employment the number of related families are considered in 200
4. Entities to be reinforced	CREA (technical orientation, management support)	
5. Capital		
By the beneficiaries	US\$ 500,000	Obs.) 1.
Governmental entity	US\$ 500,000	Support to activities
Total	US\$ 1,000,000	
6. Financing		
Beneficiaries	Ordinary budget	
Public Entity	Ordinary budget of the nation	
7. Financing Plan	Ordinary budget	Search for foreign financial aid
8. Implementation Method		
	Support to entrepreneurs (management support)	
	Entrepreneurs financing	
	Support for the project management (management support)	

Obs.) 1. Beneficiaries of the present financing as well the estimated necessary amounts are as follows:

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Agro industrial products processing	20 enterprises	25,000/ enterprise	US\$ 500,000

2.2. Promotion of Dairy Products

Item	Contents	Explanation
1. Executing Entity	Farmers Organizations- Enterprises	
2. Supporting Entities	CREA	Universities
3. Beneficiaries	Farmers Organizations- Enterprises (200 families)	
4. Entities to be reinforced	CREA (technical orientation, management support)	
5. Capital		
By the beneficiaries	US\$ 500,000	Obs.) 1
Governmental entity	US\$ 800,000	Obs.) 2
Total	US\$ 1,300,000	
6. Financing		
Beneficiaries	Ordinary budget	
Public Entity	Ordinary budget of the nation	
7. Financing Plan	Ordinary budget	Search for foreign financial aid
8. Implementation Method		
	Establishment of a cooperative (management support)	
	Support to entrepreneurial activities (management support)	
	Quality improvement (technical assistance)	
	Sales reinforcement (management support)	
	Financing to entrepreneurs (management support)	

Obs.) 1. Beneficiaries of the present financing as well as the estimated necessary amounts are as follows:

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Dairy products processing	20 enterprises	25,000/ enterprise	US\$ 500,000

Obs.) 2. Content of the governmental entity investments

Project structure	Expenses	Contents
Technical assistance	US\$300,000	—
Support to activities	US\$500,000	—
Total	US\$800,000	

2.3 Handicraft reactivation

Item	Contents	Explanation
1. Executing Entity	Farmers Organizations	
2. Supporting Entities	CREA	ONG
3. Beneficiaries	Farmers Organizations (2000 families)	
4. Entities to be reinforced	CREA (technical orientation, management support)	
5. Capital		
By the beneficiaries	US\$400,000	Obs.) 1.
Governmental entity	US\$600,000	Support to activities
6. Total Financing Beneficiaries	Micro-credits	
Public Entity	Ordinary budget of the nation	
7. Financing Plan	Ordinary budget	Search for foreign financial aid shall be looked for
8. Implementation Method	Micro-producers association (management support)	
	Support to the local activity (management support)	
	Micro-credit	

Obs.) 1. Introduction of micro-credit to improve the capacities of the handcrafters cooperative and improve sales.

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Financing to handicraft activity	40 cooperatives	US\$10,000/ cooperative	US\$ 400,000

3. Habilitation of Basic and Production Infrastructure

3.1 Habilitation of basic and agriculture infrastructure

Item	Contents	Explanation
1. Executing Entity	Farmers organization	
2. Supporting Entities	CREA	Regional government, municipalities, universities, NGO.
3. Beneficiaries	Benefited area 2,500ha	Plan elaboration in 22 parishes, irrigation works for 2,500 ha
4. Entities to be reinforced	CREA (technical orientation, management support)	
5. Capital		
By the beneficiaries	US\$0	<i>Minga</i> Activities Obs.)1
Governmental entity	US\$7,900,000	Obs 2) Obs)3
Total	US\$7,900,000	. Obs 2) Obs)3
6. Financing Public Entity	Ordinary budget of the nation	
7. Financing Plan	Ordinary budget	Search for foreign financial aid
8. Implementation Method	Project identification and habilitation of basic and production infrastructure (management support)	
	Habilitation of construction equipment	
	Material supply	
	Incentives to <i>Minga</i> participation (establishment of management)	
	Infrastructure habilitation using the supplied construction machinery and material	
	Construction equipment operation and maintenance	

Obs) 1. Construction of small scale irrigation installations through *Minga* activities by the beneficiaries reducing significantly the costs of construction. To support said activity, CREA shall provide construction machinery, pipelines as also technical assistance for the works. CREA activities shall be carried out with the national budget of Ecuador.

Obs) 2. The following equipment, machinery and material shall be supplied. Such equipment, material and machinery shall be used in the habilitation of basic and production infrastructure also for CREA and INIAP facilities habilitation. In the following chart details of equipment supply and the necessary amount are shown:

Item	Volume	Estimated Expenses	Estimated necessary credit amounts
Construction machinery supply	Construction machinery	Bulldozer, tractors, back-hovls, grader, shovel tractor, dump trucks, etc.	US\$ 5,000,000
Construction material supply	Material for the irrigation installation (equivalent to about 2,500 ha)	Cement, sand, gravel, piping, etc.	US\$ 1,000,000
	Local roads	Gravel, pipes	US\$ 500,000
	Material for simple water works	Sand, gravel, pipes, etc.	US\$ 500,000
	Material for schools, health centers	Ceiling, bricks, cement, sand, gravel, wood, desks, chairs, etc.	US\$ 500,000
Sub -Total			US\$ 2,500,000
Grand Total			US\$ 7,500,000

Obs.) 3. Content of the governmental entity investment

Project structure	Expenses	Content
Support to activities	US\$ 400,000	—

4. Environmental Conservation

4.1 Reforestation Activities

Item	Contents	Explanation
1. Executing Entity	Farmers	
2. Supporting Entities	CREA, regional government	
3. Beneficiaries	Farmers	
4. Entities to be reinforced	CREA	
5. Capital		
By the beneficiaries	US\$0	Works through <i>Minga</i> activities
Governmental entity	US\$200,000	Obs.) 1.
Total	US\$200,000	
6. Financing		
Public Entity	Ordinary budget of the nation	
7. Financing Plan	Ordinary budget	Search for foreign financial aid
8. Implementation Method		
	Seedling distribution plan (technical assistance)	
	Protected areas reforestation plan	
	Productive areas reforestation plan	

Obs.) 1. Content of governmental entities investments

Project structure	Expenses	Contents
Construction equipment supply	US\$ 100,000	Seedling production for distribution
Construction material supply	US\$ 100,000	Seedling production for distribution
Total	US\$ 200,000	

4.2 Environmental Education

Item	Contents	Explanation
1. Executing Entity	CREA	
2. Supporting Entities	Universities, NGO	
3. Beneficiaries	Farmers	
4. Entities to be reinforced	CREA (diffusion activities)	
5. Capital		
By the beneficiaries	US\$0	Work through the <i>Minga</i>
Governmental entity	US\$ 200,000	Technical assistance
Total		
6. Financing		
Public Entity	Ordinary budget of the nation	
7. Financing Plan	Ordinary budget	Search for foreign financial aid shall be looked for
8. Implementation Method		
	Environmental education to farmers	
	Environmental education to younger people	

5. Reinforcement of Supporting Entities

5.1 CREA Reinforcement

Item	Contents	Explanation
1. Executing Entity	CREA	
2. Supporting entities	CREA	
3. Beneficiaries	CREA	
4. Entities to be reinforced	CREA (technological orientation, project management)	
5. Capital		
By the beneficiaries		
Governmental entity	US\$ 2,800,000	Obs.) 1.
6. Financing		
Public Entity	Ordinary budget of the nation	
7. Financial plan	Ordinary budget	Search for foreign financial aid
8. Implementation method		
	Plan of installations modernization	
	Plan for the effective use of farms	
	Plan of human resources capacity building	

Obs.) 1. Detail of the material supply, installation construction and support to activities

	Objective	Content of supplies	Expenses
Material Supply	Implements for CREA reinforcement (implements for investigation, etc.)	Tractors, trucks, equipment for tests Computers (including software), equipment for handicraft, etc.	US\$ 900,000
Facilities construction	Construction of facilities to reinforce CREA	Farms facilities (refrigeration tank, milking rooms, test rooms, etc.) Civil works in the farms	US\$ 1,400,000
Support activities			US\$500,000
			US\$ 2,800,000

5.2 INIAP Reinforcement

Item	Contents	Explanation
1. Executing Entity	INIAP	
2. Supporting entities	INIAP	
3. Beneficiaries	INIAP	
4. Entities to be reinforced	INIAP (technological orientation, project management)	
5. Capital		
By the beneficiaries		
Governmental entity	US\$1,300,000	Obs.) 1.
6. Financing		
Public Entity	Ordinary budget of the nation	
7. Financial plan	Ordinary budget	Search for foreign financial aid
8. Implementation method		
	Facilities improvement plan	
	Investigation reinforcement plan	

Obs.) 1. Details of material supply, facilities building and support to activities

	Objective	Content of supplies	Expenses
Material Supply	Material to reinforce the INIAP (test equipment, etc.)	Soil test equipment, equipment for several types of tests, computers, vehicles, video cameras, etc.	US\$1,000,000
Facilities construction	Facilities building for INIAP reinforcement	Greenhouses, seed warehouse, construction of facilities for seed drying. Storehouse for farming implements, farms rehabilitation, etc	US\$ 300,000
			US\$ 1,300,000