

PART-2 THE ACTION PLAN

Chapter 6 INTRODUCTION

6.1 Objectives of Action Plan

The Master Plan was formulated consisting of two plans, eight programs and 15 sub-programs. Each program or sub-program will be implemented and exercise effectively through full participation of stakeholders. For this, each stakeholder should be acquainted with his/her responsibility and roles in the program/sub-program. To perform the responsibility and roles, each stakeholder should know what kind of actions must be taken and when they should be done. In this context, the objectives of the Action Plan are;

- To acquaint stakeholders with details of the program / sub-program, such as target, activities, input, output,
- To identify necessary actions that are prerequisite for achieving the targets,
- To understand responsibility and roles of each stakeholder on the above actions and schedule one another,
- To monitor and maintain implementation of the Action Plan, and
- To realize transparency of the process of the formulation and implementation.

6.2 Basic Concept and Approach of Formulation of Action Plan

6.2.1 Definition of Action Plan

Action plan is a detailed plan consisting of; i) identification of stakeholders who should play certain roles in the implementation of proposed projects, ii) clarification of responsibility and role by stakeholder, iii) identification of actions to be taken by stakeholder, iv) setting of time schedule for each action, and v) monitoring and coordination of each action.

Once the action plan is formulated, authorized and kept by all the stakeholders, progress, status and necessary arrangement of the project could be known by all the stakeholders.

6.2.2 Concept of Action Plan

At the end of the development study, master plan is formulated. Accordingly, action plans should be prepared for each program and sub-program to realize their smooth implementation. Since the various stakeholders are related to those programs, the action plan should be kept by all the stakeholders. Therefore, an action plan should include all the necessary information on the program.

For instance, the action plan for the “Farm Road Construction Program” of Drepong Gewog of Mongar, should be maintained only for the farm road construction in Drepong Gewog, and be kept by MOA (responsible for construction machinery), Mongar Dzongkhag (responsible for implementation), Drepong Gewog (responsible for labor arrangement), and beneficiaries (Farm Road Users’ Cooperative). These stakeholders can monitor the actions.

6.2.3 Approach of the Formulation of Action Plan

(1) Participatory Approach

Since the Action Plan determines responsibility and role of stakeholders, formulation of the Action Plan should be undertaken by getting participation of all the stakeholders. Meeting

and discussion should be held in the course of the formulation process in order to share common understanding of the Action Plan.

(2) Guideline for Formulation of the Action Plan

Procedures and approaches to formulate the Action Plan should be transparent so that each stakeholder could know clearly the formulation process. Hence, certain format and procedure of formulation are required to modify the Plan comprehensively. “Action Plan Sheet” was prepared as a format, and procedure to use this sheet is explained in the Annex-X of the Final Report “*Guideline for Formulation of the Action Plan*” with sample action plans of the priority Gewogs.

The Guideline consists of;

- Chapter X-1 : Introduction
- Chapter X-2 : Approach of Formulation of Action Plan
- Chapter X-3 : Formulation of Action Plan by Program
- Attachment X-1: Action Plan Sheet
- Attachment X-2: Action Plans of Priority Gewogs

“Approach of Formulation of Action Plan” introduces; i) definition of the action plan, ii) concept of the action plan, iii) approach of formulation of the action plan, and iv) programs for the action plan and related stakeholders.

“Formulation of Action Plan by Program” introduces usage of “Action Plan Sheet”, which is a form to formulate the action plan. The Action Plan Sheet should be prepared by program or sub-program. “How to fill up and keep it as an authorized action plan” is mentioned here.

“Action Plans of Priority Gewogs” includes the action plans of the priority Gewogs, which were formulated in the action plan stage.

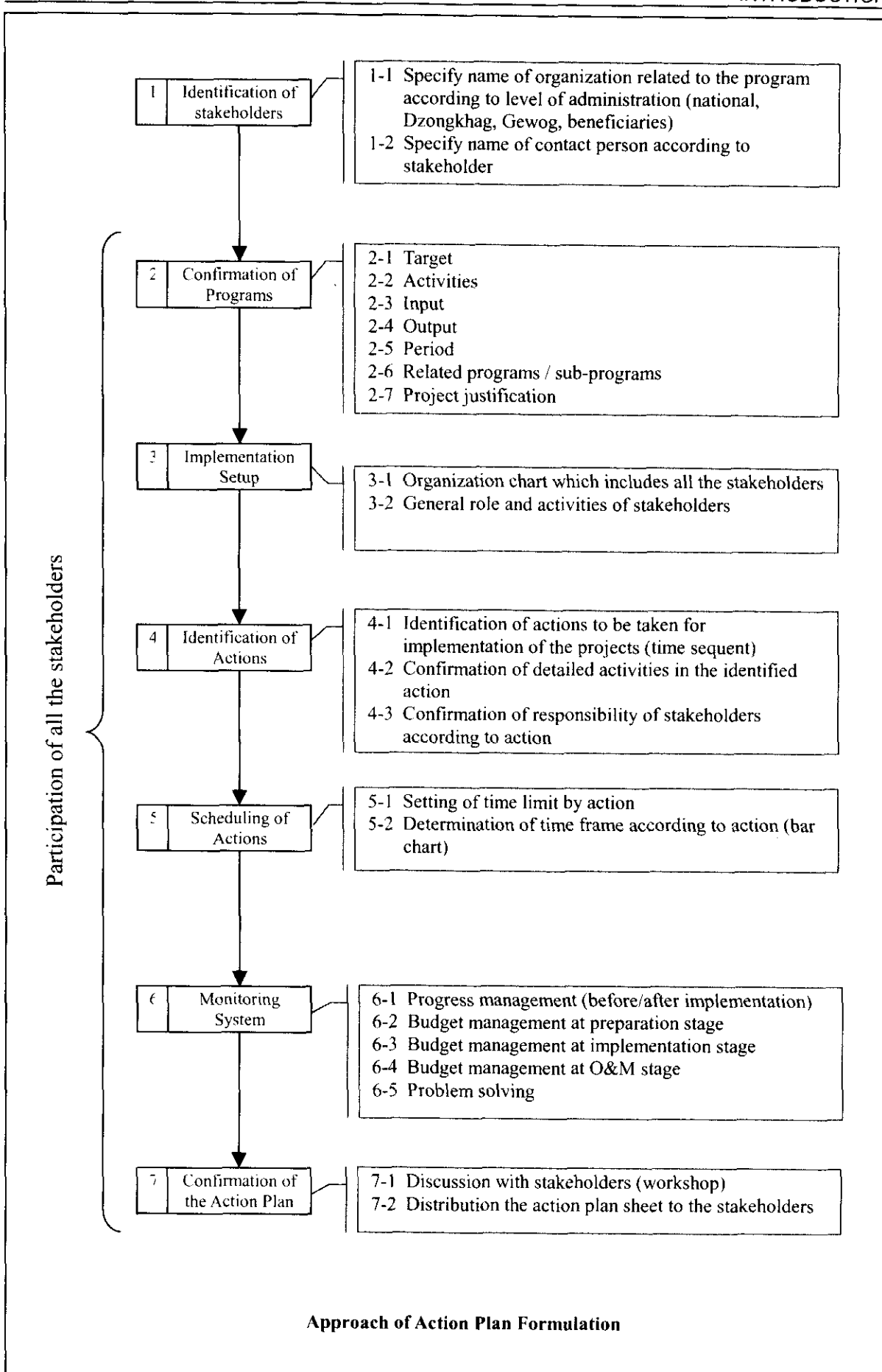
The approaches of formulation of the action plan is shown in the following page.

6.3 Programs and Sub-programs

Related stakeholders and their roles are shown in Page 6-5. General responsibility of each stakeholder is mentioned here according to program / sub-program.

(1) Food Security Sub-program

Main activities of this sub-program are to formulate a production plan of food crops of Dzongkhag and training of EAs on food crop cultivation. Dzongkhag (agricultural sector and EA) will be responsible for the sub-program and Gewog should provide necessary data for the planning.



(2) Paddy Rice Production Sub-program

Main activity of this sub-program is to formulate a production plan of rice of the Dzongkhags to meet increasing demand of rice. The target of this sub-program will be reflected on the Food Security Sub-program. Dzongkhag (agricultural sector and EA) will be responsible for the sub-program and Gewog should provide necessary data for the planning.

(3) Irrigation Development Sub-program

Main activity of this sub-program is to construct or rehabilitate irrigation facilities. Water users association will also be formulated and/or activated. Since the irrigation scheme is located within a Gewog, Gewog should be responsible for implementation and beneficiaries should also take responsibility on construction works.

(4) Backyard Animal Husbandry Sub-program

Main activity of this sub-program is to formulate a production plan of backyard livestock. Dzongkhag will be responsible for planning of production and dissemination of the plan to Gewogs. Gewogs and beneficiaries will be directly involved in the implementation of the sub-program. Gewogs should formulate its own production plan and the beneficiaries will participate in the sub-program.

(5) Program for Cash Crop Production Strengthening

The objectives of this program are to develop suitable cash crops for natural condition of the Study Area and disseminate appropriate production technique to the field level. Main activities of the program are; selection of crops, research and development of the selected crops, training of EAs and training of beneficiaries on post-harvest. RNR-RC East or MOA will be the main responsible organization and EA (Dzongkhag staff) should be fully involved. Post-harvest Technology Training Sub-program will involve beneficiaries directly as trainee.

(6) Market System Development Program

Main activities of the program are construction of collection depots along the motor road, organizing group activities on marketing such as group assembling and shipping of products and shipping by FCB transport. While Marketing Support Sub-program will be handled by FCB in cooperation with beneficiaries group for marketing, the other sub-programs will be undertaken by Gewog.

(7) Extension Strengthening Program

In accordance with the production plan formulated in "Program for Food Crop Production Increase" and "Program for Cash Crop Production Strengthening", Gewog-wise planning and dissemination will be supported in this program. Gewog will take the main responsibility of this program and Dzongkhag will fully support the activities with EAs.

(8) Farm Road Construction Program

Gewog should take initiative and responsibility on infrastructure development within the Gewog. According to the Farm Road Guidelines, the beneficiaries should contribute unskilled labor and MOA would provide construction machinery. Dzongkhag will coordinate the implementation.

Responsibility of Stakeholders for Implementation of the Proposed Programs

Plan / Program / Sub-program		Stakeholders			
		MOA	Dzong-khag	Gewog	Beneficiaries
REGIONAL AGRICULTURE DEVELOPMENT PLAN (RADP)					
P1: Program for Food Crop Production Increase					
P1-SP1	Food Security SP		⊙		
P1-SP2	Paddy Rice Production SP		⊙		
P1-SP3	Irrigation Development SP		△	⊙	○
P1-SP4	Backyard Animal Husbandry SP		⊙	○	○
P1-SP5	Post-harvest Technology Training SP		⊙		○
P2: Program for Cash Crop Production Strengthening					
P2-SP1	Market Research SP	⊙	○		
P2-SP2	Technical Research and Development SP	⊙	○		
P2-SP3	Training of Extension Agent SP	⊙	○		
P2-SP4	Agro-processing Technology Training SP	⊙			○
P3: Market System Development Program					
P3-SP1	Collection Depot Construction SP		○	⊙	○
P3-SP2	Group Assembling SP		△	⊙	○
P3-SP3	Group Assembling and Marketing SP		△	⊙	○
P3-SP4	Marketing Support SP by FCB	⊙	△		
P4: Extension Strengthening Program					
P4-SP1	Extension Strengthening for Food Crop SP	△	○	⊙	○
P4-SP2	Extension Strengthening for Cash Crop SP	△	○	⊙	○
FARM ROAD DEVELOPMENT PLAN (FRDP)					
P1: Farm Road Construction Program		○	⊙	○	○
P2: Farm Mule Track Construction Program			○	⊙	○
P3: Light-load Bridge Construction Program		○	⊙	○	○
P4: Construction Machinery Center Program		⊙			

Note: ⊙:Mainly responsible, ○:Responsible, △: Support

(9) Farm Mule Track Construction Program

Since the farm mule track construction will be implemented without construction machinery, Gewog should manage labor force and implement the program. Dzongkhag will support the Gewog.

(10) Light-load Bridge Construction Program

Light-load bridge is a project of new concept. Even with “Guideline on Light-load Suspension Bridge” that was prepared in the course of the Study, technical support from MOA and DOR is required.

(11) Construction Machinery Center Program

Main activities of this program are procurement of construction machinery for CMU, construction of a workshop for the machinery and training of CMU staff on operation and maintenance of the construction machinery. MOA will be responsible for the program.

6.4 Priority Gewogs

6.4.1 Basic Approach

Four Gewogs were selected as “Priority Gewogs” for formulation of the Action Plan.

In Chapter 4 and Chapter 5, 24 Gewogs in the Study Area were analyzed on seven indices and categorized into three development stages. Each stage should have its own target, optimum approach, strategy, and input for development. It was proposed to select one Gewog from each development stage with a total of three Gewogs. It should be noted that “priority” in this case does not mean “development priority” or “strong need for development” but Gewogs whose formulation process of Action Plan would provide good example or feedback to other Gewogs”.

Gewogs according to development stage are summarized below:

Development Stage and Gewogs	
Stage	Gewogs
1	Jaray, Khoma, Kurtoe, Metsho (Lhuntse) Drepong, Gongdue, Jurme, Kengkhar, Silambi, Thangrong (Mongar)
2	Gangzur, Minjay, Tsenkhar (Lhuntse), Balam, Chali, Drametse, Saleng, Serimuhang, Tsakaling, Tsamang (Mongar)
3	Menbi (Lhuntse), Chaskhar, Mongar, Ngatshang (Mongar)

6.4.2 Selection Criteria

The selection criteria were discussed and set as follows:

(1) Croiterion-1 ~ Independent Gewogs

Development plan of the priority Gewog should be independent from those of the other Gewogs. For instance, the starting point of farm road development should be located in the Gewog itself. Otherwise, the farm road development of other Gewogs should be considered “pre-condition” and the Action Plan of the proposed Gewog can not be formulated without

the Action Plan of other Gewogs.

Gewogs which are independent from the development of other Gewogs are shown below:

Gewogs Independent from Development of Other Gewogs	
Stage	Gewogs
1	Khoma, Kurtoe (Lhuntse) Drepong (Mongar)
2	Gangzur, Minjay, Tsenkhar (Lhuntse), Chali, Drametse, Saleng, Tsakaling, Tsamang (Mongar)
3	Menbi (Lhuntse), Chaskhar, Mongar, Ngatshang (Mongar)

(2) Criterion-2 ~ Target and Potential Crop for Stage-1 Gewogs

The main theme of the Stage-1 is “fulfillment of BHN” for “improvement of living standard and income”, and “increase of food production” for “food security”.

Three Gewogs remained after screening of Criterion-1 are Khoma, Kurtoe and Drepong. Out of these, food shortage index (refer to Table 4.1.1) of Khoma and Kurtoe is “B”, while that of Drepong is “C”. Moreover, potential crop identified by the Gewogs (refer to Table 5.3.1) for Khoma and Kurtoe is rice, while that for Drepong is maize.

Considering the food shortage status and the prospect that it would be very difficult to satisfy demand of food grain with rice, Drepong was selected as the priority Gewog representing Stage-1 Gewogs.

(3) Criterion-3 ~ Advantage of Location for Marketing for Stage-3 Gewogs

As the representing Gewog of the highest development stage, the priority Gewog should have the highest market potential in terms of location. Out of four Gewogs situated at Stage-3, Chaskhar Gewog in Mongar is situated at the closest location to the export market, i.e., Samdrup Jongkhar. Thus, Chaskhar was selected as the priority Gewog representing Stage-3 Gewogs.

(4) Criterion-4 ~ Selection of Stage-2 Gewogs

The priority Gewog for the Stage-2 was selected from Lhuntse Dzongkhag, because the priority Gewogs for Stage-1 and Stage-3 were selected from Mongar Dzongkhag.

Gangzur, Minjay and Tsenkhar Gewogs were identified as Stage-2 Gewogs in Lhuntse Dzongkhag. Being located in the center of the Dzongkhag with larger area, Gangzur Gewog has the average condition of Gewogs in Lhuntse Dzongkhag. Thus, Gangzur Gewog was selected as the priority Gewog representing Stage-2 Gewogs. Other reasons of selecting Gangzur Gewog are as follows:

- A market-shed is going to be constructed at the Gewog center (near Dzung),
- Dzongkhag administration office and RNR center are located,
- Higher priority was given by Dzongkhag Administration,
- Areas of wet land rice, special crop of Lhuntse Dzongkhag, and irrigation schemes are the largest in Gangzur, and
- The Action plan of Gangzur would be referred to Kurtoe, the largest Gewog in

Lhuntse Dzongkhag.

However, the above three Gewogs do not include “Farm Mule Track Construction Program” and “Light-load Bridge Construction Program”. After making due discussion and consideration, Khoma Gewog was selected only for these two programs mainly because of its location near Gangzur.

6.5 Work Done

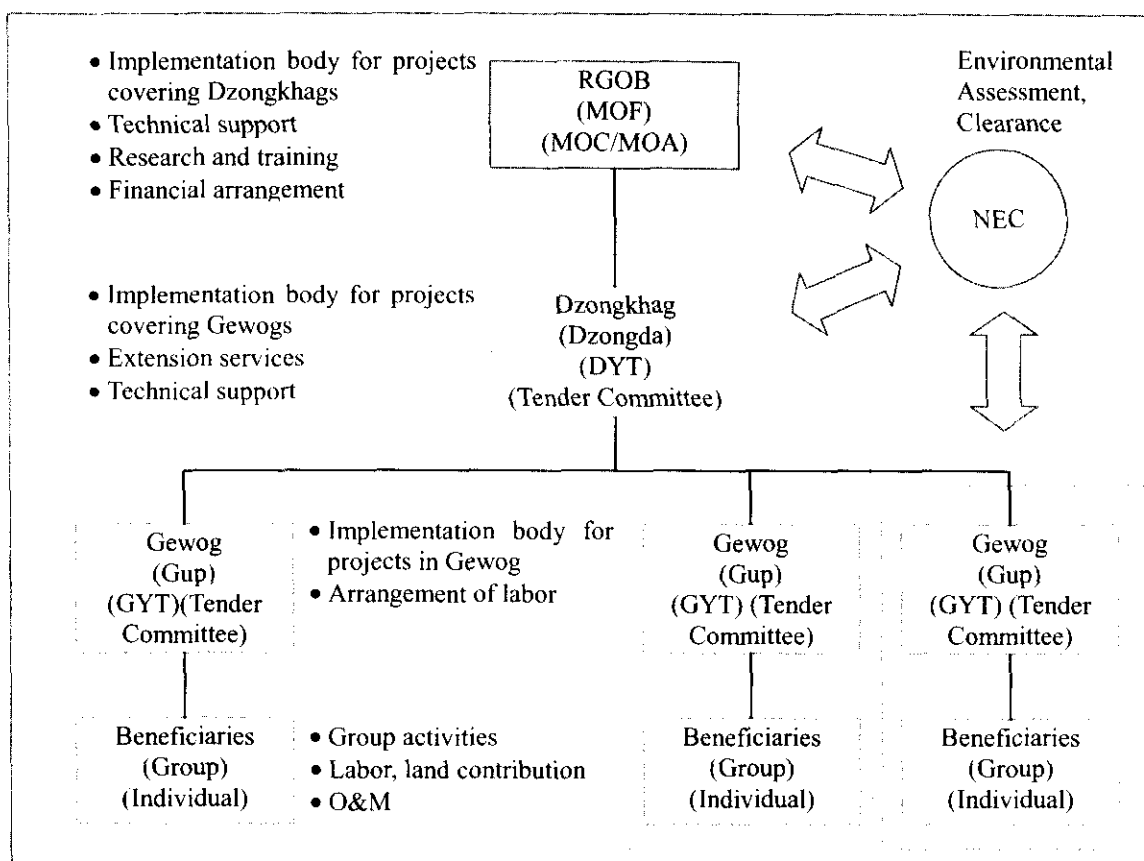
At the beginning of the Action Plan stage, the 8th bi-weekly meeting was held in Lhuntse and Mongar Dzongkhags respectively, to confirm the contents of the Master Plan. Then a workshop for formulation of Action Plans was also held in each Dzongkhag with priority Gewogs, namely, Gangzur and Khoma for Lhuntse, and Drepong and Chaskhar for Mongar. Preliminary process of the action plan formulation (confirmation of programs and sub-programs related to the Gewogs, identification of actions required) was taken through due discussion with representative of Gewogs and beneficiaries (Gup, Mangmi), extension agents, Dzongkhag officials, and MOA counterparts.

After the workshop, draft action plans were formulated through discussion with Gewog and other stakeholders mostly at each Gewog, then another workshop was held with priority Gewogs to finalize the Action Plan. Seminar on the formulation of the Action Plan was held inviting all the Gewogs to explain formulation procedure of the Action Plan according to the Guideline for Formulation of the Action Plans. In the seminar, representative of each stakeholder of the priority Gewog presented the procedure, process and contents of the Action Plans to the participants.

Chapter 7 GENERAL ROLES AND RESPONSIBILITIES BY ADMINISTRATION

7.1 General

In accordance with the RGOB's policy, namely, decentralization or devolution of authority to local administration, the Gewog should be the core institution for development activities. A significant change during the 9th FYP will be the introduction of the Gewog Plans. As authority continues to devolve from the center to the Dzongkhag and further to the Gewog levels, devolution will also be reflected in decision-making and financial powers. The legal basis for Dzongkhag and Gewog authority and administrative powers including responsibilities of plan preparation and implementation will be enshrined in the revised DYT and GYT Chathrim (Act).



Roles and Responsibility of Stakeholders

7.2 Roles and Responsibilities of RGOB

Prior to implementing the projects of the Master Plan, various arrangements should be undertaken by RGOB. For instance, MOA should apply for the project budget to the Ministry of Finance (MOF) and MOF should seek for the budget source from either external or internal resources.

In the Master Plan, some of the proposed programs require immediate action by RGOB. They are "Program for Cash Crop Production Strengthening" of "Regional Agricultural Development Plan, Lhuntse and Mongar" (RADP-LM), and "Farm Road Development Plan" (FRDP-LM), both of which require input from external resources, such as foreign experts and

construction machinery and equipment. Considering the target year of the Master Plan, i.e., 2012, these actions by MOA should be started immediately.

The Action Plan of RGOB will be formulated mainly focusing on such time frame, budget allocation and capacity of related institutions.

7.3 Roles and Responsibilities of Dzongkhags

(1) Dzongkhag Plan

Dzongkhag Plan consists of separate Dzongkhag and Gewog programs. Dzongkhag programs will constitute development activities that have relevance to the Dzongkhag as a whole but are not necessarily applicable to a specific Gewog. The Dzongkhag Plan to a large extent includes programs geared towards institutional strengthening and capacity development of their sectoral human resources. Dzongkhag programs also includes coordination, supervision and quality control services for Gewogs and intra-Gewog activities along with technical backstopping support, which shall be executed and implemented by the Dzongkhag either independently or jointly with the sectors in the center. Since most of the RNR activities are implemented in Gewogs, the Dzongkhag RNR programs consist of providing coordination for intra-Gewog activities and technical backstopping support to the Gewogs.

(2) DYT

According to the DYT Chathrim (Act) 2002, general functions and powers of DYT related to the Action Plan are as follows:

- Promote awareness and dissemination of national objectives,
- Promote co-operation amongst Gewogs, municipalities, towns, and Dzongkhag,
- Promote balanced economic development in the Gewogs under the Dzongkhag,
- Promote co-operatives toward economic growth which contributes to employment and welfare,
- Adopt procedures and rules to implement national laws, wherever relevant,
- Submit motions arising from Gewogs and Dzongkhag to the National Assembly,
- Strive to resolve inter-Gewog disputes through conciliation and mediation, and
- Make recommendations on activities with major environmental impacts such as construction of roads, extraction and conservation of forests, mining and quarrying.

The following are the areas of powers and functions of DYT related to the Action Plan.

- Designation and protection of monuments and sites of cultural and historical interests,
- Designation and protection of areas of special scenic beauty or biodiversity as Dzongkhag parks and sanctuaries,
- Protection of consumers from unfair prices and counterfeit goods as provided by law,
- Prevention of dangerous communicable diseases among livestock in accordance with the Livestock Act, 2001, and
- Regulation of safety standards and prices of dairy and livestock products in accordance with the Livestock Act, 2001.

DYT also has administrative power and functions to give directions and approval on the following:

- Dzongkhag and Gewog FYP and annual plans,

- Prioritization of development activities,
- Construction of farm and feeder roads,
- Dzongkhag agricultural and livestock farms and selection of crop varieties and breeds of livestock,
- Strategies for marketing outlets for local agricultural products,
- Forest management plan including extraction, conservation and forest road construction in accordance with the Forest and Nature Conservation Act, 2001,
- Communication services,
- Small and medium scale industries,
- Appointment of three members of DYT including the Gup concerned, who shall not be civil servants, for a period of one year at a time, to serve on Dzongkhag administration tender committee, which shall further consist of officials in accordance with regulation,
- Recommendation of credit programs,
- Co-operatives involving inter-Gewog members, in accordance with the Co-operative Act, 2001,
- Monitoring and evaluation of all activities in the Dzongkhag, including Gewog plan activities,
- Monitoring and review of labor contribution managed by GYT,
- Mobilization of work force,
- Protection of forests, and all types of government and community lands from illegal house and similar constructions and other encroachments,
- Control of construction of structures, whether on national, communal or private lands, within 50 feet of highways falling within Dzongkhag, including enforcement of measures such as cessation of construction, and demolition of the structure, and
- Acquisition of land within the Dzongkhag for public use as provided in law.

DYT should be vested with adequate financial powers related to the Action Plan as follows:

- Prioritization and allocation of resources to Gewog and Dzongkhag plan activities, upon confirmation of budgetary outlay by MOF,
- Re-appropriation of the Gewog plan budget of a particular Gewog to other Gewog from activities which have no possibility to be implemented on time, provided the recipient Gewog's activity is part of its Gewog plan.
- Re-appropriation of Dzongkhag plan budget as provided in rules,
- Review and ratify the Gewogs accounts of rural tax and other collections and expenditures thereof,
- Review and ratify the accounts of plan expenditures of the Gewog incurred under the authority of GYT, and
- Review of accounts of Dzongkhag administration accounts.

(3) Dzongkhag Administration

The general function of Dzongkhag Administration is to carry out the decisions approved by DYT as follows:

- Accord technical sanctions for works worth up to Nu. 20 million, provided it is certified by a competent engineering personnel,
- Award works or procurement order, through Dzongkhag tender committee, as provided in regulation,

- Award petty contract works, in accordance with the norms, rules and regulations prescribed by RGOB from time to time for maintenance of roads falling within the Dzongkhag,
- Construct farm and feeder roads within Dzongkhag, in conjunction with NEC,
- Personnel administration of all civil servants of the Dzongkhag, including those posted in the Gewogs,
- Recruit and appoint all sectoral staff in the Dzongkhag, against RCSC sanctioned strength in accordance with RCSC rules and regulations,
- Select and nominate staff for study tours, conferences and workshops,
- Prepare human resources development plan of the Dzongkhag in conjunction with RCSC,
- Determine the choice of design, construction methods and building materials for forms, which do not have to follow standard designs, in conformity with acceptable technical and structural norms,
- Execute establishment of agricultural and livestock farms,
- Promote crop varieties and breeds of livestock,
- Develop and implement strategies for marketing outlets for local agricultural products,
- Approve allocation of timber permits as per the rules and regulations issued by MOA from time to time,
- Issue licenses for establishment of cottage, small and medium industries as per the guidelines/rules and regulations issued from time to time by MTI, and
- Register co-operatives in accordance to the Co-operative Act 2001.

(4) System for Implementation of Activities

MOF has issued the Financial Rules and Regulations 2002 (hereinafter referred to as “FRR 2002” which came into effect on 23rd of July 2002 for facilitating the decentralization process to the Dzongkhag level. The objective of the rules is to facilitate DYT to make decisions with regard to the execution and regulation of the activities by Dzongkhag.

System of implementation activities as specified in the FRR 2002 are as follows:

(a) Budget Proposal

The annual budget proposals prepared by Dzongkhag administration based on the approved FYP shall be submitted to DYT for review and approval.

After DYT’s approval, the proposals shall be submitted to the Department of Budget and Accounts (DBA) of MOF.

(b) Execution of Approved Activities

DYT shall approve the execution of activities subject to the availability of annual fund allocations from the national budget

(c) Financial Powers

In the exercise of their financial responsibilities, DYT and Dzongkhag Administration shall have the powers as specified in the Rules and as delegated in the schedule in Table 7.3.1.

(d) Tender Committee

In order to disburse the budget for implementation of the approved programs, a tender committee shall be organized at Dzongkhag level. The Committee shall be equated with the Ministerial Tender Committee (MTC) and accordingly its powers shall be at par with those of MTC.

The tender committee of Dzongkhag shall comprise of the following:

- Dzongkhag Administrator (Dzongdag) as the chairperson,
- Gup of Gewog concerned in case of Gewog referred tenders,
- The Financial Section head,
- The relevant section head,
- The engineer-in-charge in the case of works, and
- Three elected DYT members for a period of one year.

7.4 Roles and Responsibilities of Gewogs

(1) Gewog Plan

Gewog Plan mostly consists of social and rural infrastructure development. Farm roads, outreach clinics, primary schools and rural water supply schemes along with RNR programs are some of the major activities. Gewog programs have been developed taking into account their priorities and potential. Gewogs have prioritized their activities based on their ability to participate in terms of labor contribution and responsibility pertaining to land acquisition and resolution of disputes, etc. Since Gewog Plans have not been included in Dzongkhag Plans, Gewog will be fully responsible for their activities.

(2) GYT

According to the GYT Chathrim (Act) 2002 issued by Ministry of Home Affairs, the following roles and responsibilities are clearly mentioned.

The Gewog Development Committee (GYT) comprising of Gup (elected head of Gewog), Mangmi (elected representative of Gewog) and Tshopa (representative of village or cluster of villages). Chimi (elected member of National Assembly representing his/her constituency), Gewog clerk and representatives of various sectors in the Gewog shall attend GYT as observers. GYT meeting should be held at least one every three months chaired by Gup.

As for regulatory powers of GYT, the following items are closely related to the activities of the Action Plan.

- Allocation of irrigation water, in accordance with the provision of the Land Act, 1979,
- Protecting and harvesting of edible forest products in the local area in accordance with the Forest and Nature Conservation Act, 1995,
- Setting up of co-operatives, within the scope of the Cooperative Act 2001, and
- Exemptions of households from works determined by villages beneficiaries contribution in cash, in kind or in labor

Administrative powers and functions of GYT related to the Action Plan are as follows:

- Identification, prioritization and formulation of activities for the Gewog plan, for which the technical backstopping and advisory services must be provided by the sector staff of Dzongkhag Administration,

- Administration, monitoring and review of all activities that are part of Gewog's plans,
- Discuss and submit three monthly progress reports to the Dzongkhag administration including on financial and administration matters, performances of civil servants, etc,
- Conservation and protection of water sources, lakes, springs, streams and rivers,
- Custody and care of communal lands, community forests, including sokshing and nyekhor tsamdo, medicinal herbs and accordingly prevention of illegal house construction and all other types of encroachments in such community lands as well as Government land and forests,
- Promotion of co-operatives and community initiated and managed activities in Gewog,
- Award of contract works, and
- Appointment of Gewog tender committee and other committees required for discharging functions of GYT.

GYT is also vested with budgetary and financial powers related to the Action Plan as follows:

- Approval of the Gewog's annual budget,
- Accordance of approval by GYT for works or activities costing above Nu. 50,000,
- Accordance of other financial approvals as required under regulations,
- Re-appreciation of Gewog plan budget, as provided in regulation,
- Approval of the plan for maintenance of development infrastructures to be met from the retained rural taxes,
- Approval of the plan for use of other funds raised by the GYT itself, and
- Approval of rates of local utilities like irrigation water, locally generated power and drinking water necessary for the upkeep of such utilities

(3) Gup

Powers and responsibilities of Gup related to the Action Plan are as follows:

- Oversee the overall affairs of the Gewog and implement the decisions of the GYT,
- Appoint and exercise administrative control of non-civil service personnel such as the Gewog clerk and communal caretakers, appointed in the Gewog under the authority of GYT,
- Carry out works approved by GYT in accordance with the financial rules and regulations in execution of works, and
- Accord financial sanctions for activities costing up to Nu. 50,000.

(4) Financing

In the FRR 2002, system for implementation of activities is mentioned aiming at facilitating GYT to make decisions with regard to the execution and regulation of activities by Gewogs.

The funds for Gewog-level activities comprise of i) rural taxes (land tax including grazing tax, house tax, cattle tax), and ii) Gewog's locally mobilized funds which may be used to supplement the rural tax amounts to meet the local requirements, and iii) centrally allocated funds for specific plan activities.

(5) System for Implementation of Activities

The expenditures to be met from centrally allocated funds will be applied in accordance with the following procedures as mentioned in FRR 2002.

(a) General

GYT shall approve the execution of activities limited to their Gewogs subject to the availability of annual fund allocations from the national budget. Gups shall execute the activities in accordance with the provisions of FRR 2002, subject to the following variations:

1) Budget Appropriation and Releases

- ① The annual budget proposals shall be prepared by Gups with the help of Dzongkhag Finance Sections (DFS) and submitted to GYT,
- ② After GYT approval, the proposals shall be submitted to the Dzongkhag administration, which will turn after incorporation with its own budget, submit to DBA, MOF,
- ③ DBA shall open separate Letter of Credit (LC) accounts for each of Gewogs at Dzongkhag,
- ④ The appropriated provisions shall be released to Dzongkhags in the LC accounts of the respective Gewogs,
- ⑤ The LC accounts shall be operated by the respective Gups and the head of DFS jointly.

In the exercise of their financial responsibilities, GYT and Gup shall have the powers as delegated in the schedule in Table 7.3.1.

2) Payment and Accounts

- ① The authorization for payments shall be given by Gup as the head of GYT, and based on only such authorizations, DFS shall make the payments.
- ② Payments shall be regulated as per FRR 2002. DFS shall maintain all the books of accounts and other financial records separately for each Gewog.

3) Accounts Reporting

- ① The monthly receipts and payments statements with the prescribed schedules shall be submitted to DBA, MOF
- ② The accounts of all receipts and payments must be submitted to GYT and DYT annually for review and ratification.

4) Engineering and Other Technical Services

- ① The payments for works shall be made upon the verification of the bills by the engineers.
- ② Dzongkhag Engineering Section (DES) shall prepare the designs, estimates, tender documentation, etc.
- ③ The functional design, location, the cost estimates and the mode of undertaking the works shall be scrutinized and approved by GYT.
- ④ DES shall be responsible for the supervision of works, maintenance of relevant records, and certification of claims as required under FRR 2002.

5) Procurement

Gup shall execute the activities in the following manner.

- ① The activity should be part of the plan approved by GYT and for which funds have been mobilized,
- ② He / She should get the estimates for the activity prepared, and have the tenders floated
- ③ For a particular activity costing more than Nu.50,000, the Gup shall obtain the sanction of GYT.
- ④ The procurement shall be conducted in accordance with the provisions of FRR 2002.

6) Tender Committee

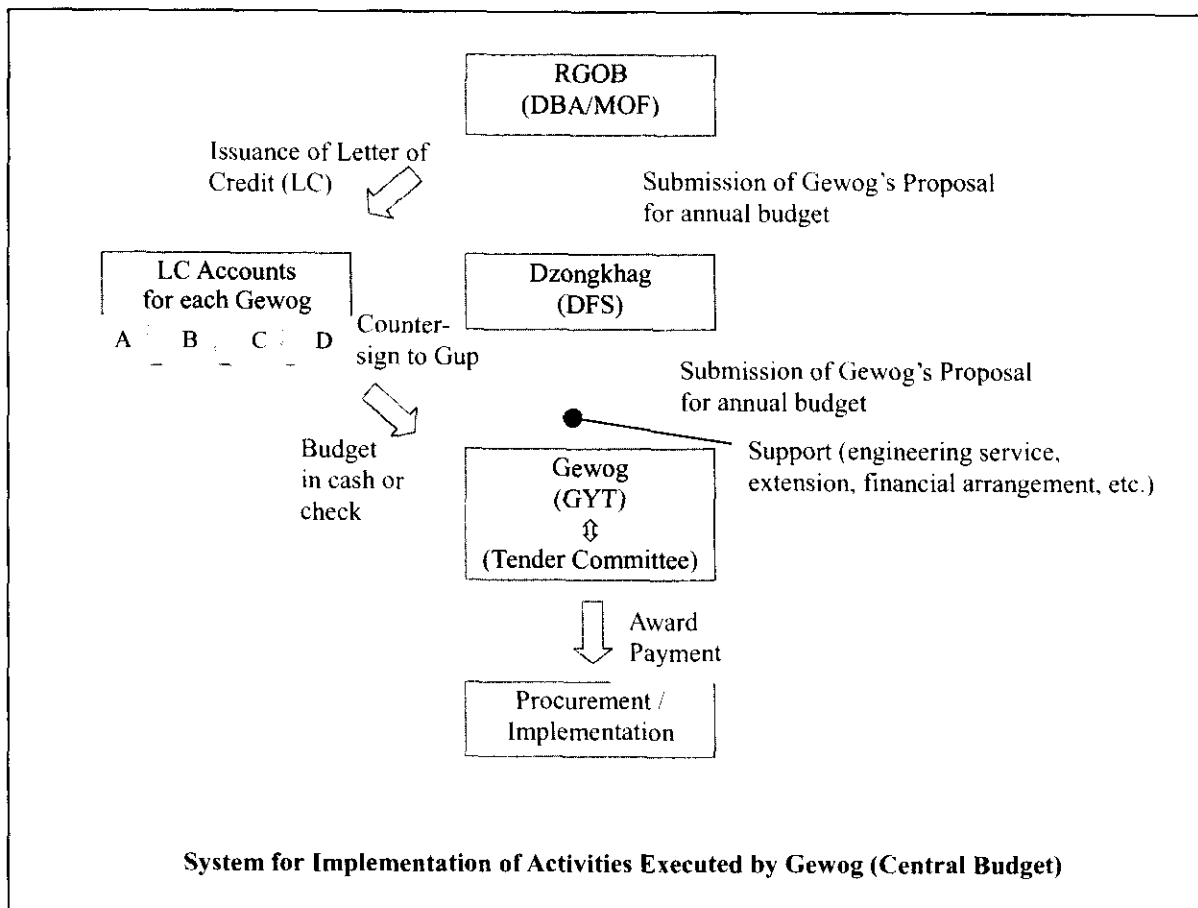
A tender committee of Gewog shall be formed to recommend the award of contracts for both the tiers of implementation. The tender committee shall consist of;

- Gup as the chairperson,
- Gewog clerk or Dzongkhag Finance Section head, and
- Three elected GYT members other than Gup for a period of one year.

The Gewog tender committee shall be equated with the Departmental Tender Committee (DTC), and accordingly its power shall be at par with those of DTC.

The final decision shall be given only by GYT.

Finance arrangement at Gewog-lead activities is illustrated below.



Chapter 8 ACTION PLAN BY PROGRAM

8.1 Target Setting of Crop Production by Gewog

This Section describes formulation of crop production plan in Gewog including backyard animals (small animals). Since basic information and data for formulation of detailed production plan is not available, survey on present situations and development potential are included in the Action Plan itself for preparation of more accurate production plan.

8.1.1 Food Crop

(1) Land Use Plan

Agricultural production plan for food crop should be prepared based on the farmland potential for cereal crops. As mentioned in Chapter 3, three information sources are available on farmland of Gewogs as follows:

- i) Land registration record for land ownership and land taxation,
- ii) RNR Statistics 2000 based on the agricultural census in 2000, and
- iii) Land Cover Map prepared by MOA based on the satellite image.

It is conceivable that the farmland areas by the former two sources are considerably smaller than the actual one. The farmland area of RNR Statistics was derived from interviewee's answers which were sampled for census survey (10%). The actual farmland area including Tseri might be applied as potential farmland area based on the Land Cover Map. Farmland area in the target year may be estimated through examination of changes of land use categories such as "from dry land to wet land", and "from Tseri to dry land or to orchard". Improvement of land use of Tseri is expected or recommended for environmental sustainability through change of the land use to orchard, forestry and improved pastureland. It is an essential policy on land use of the RGOB. Farmland plan of priority Gewogs is shown in the table below:

Estimated Farmland of the Priority Gewogs				
	Wet land	Dry land	Tseri	Total
Gangzur				
Registered ^{*1}	167	238	151	556
Estimated ^{*2}	330	430	360	1,120
Proposed ^{*3}	330	430	360	1,120
Chaskhar				
Registered ^{*1}	44	195	67	306
Estimated ^{*2}	77	443	230	750
Proposed ^{*3}	77	443	230	750
Drepong				
Registered ^{*1}	16	122	3	141
Estimated ^{*2}	20	220	570	810
Proposed ^{*3}	20	220	570	810

Note ^{*1}: Area by Land Registration Record.

^{*2}: Estimated based on Land Cover Map by the Study Team.

^{*3}: Assumed that land use of the target year is same as present area.

(2) Food Production Plan

Cereal production plan was prepared based on the present production and potential of increase (planted area and unit yield). Present planted area shown in the following table was estimated from production of each crop compiled in RNR Statistics 2000. Yield was assumed at 2.2 ton/ha for paddy, 2.0 ton/ha for maize, and 1.0 ton/ha for other cereals.

Prospective production in the target year was set up through the following examinations:

- Expansion of planted area in the existing fallow land¹ according to increasing of labor force with population growth, irrigation development for paddy, and cultivation of winter crops after harvesting of summer crops,
- Yield increase by utilization of improved HYVs, dissemination of improved crop management, and irrigation development including rehabilitation of wet land.

Proposed cropping areas which were estimated through the examination of potential of farmland area and available labor force in the future are shown in the table below:

Planted Area of Food Crop in Priority Gewogs

(Unit: ha)

	Gangzur		Chaskhar		Drepong	
	Present	2012	Present	2012	Present	2012
Paddy	275	317	70	77	17	20
Maize	347	365	514	565	176	202
Others* ¹	25	31	58	75	93	112
Total	647	713	642	717	286	334
C.I. (A) ^{*2}	33 %	94 %	123 %	138 %	119 %	139 %
C.I. (B) ^{*3}	58 %	64 %	86 %	96 %	35 %	41 %
Per capita ^{*4}	0.19	0.16	0.21	0.18	0.17	0.15

Note *1: Wheat, barley, millet and buckwheat.

*2: Cropping intensity to wet land and dry land.

*3: Cropping intensity to wet land, dry land and Tseri.

*4: Planted area per capita (population in target year assumed at 128 % of present level).

Yield at the target year will be increased by dissemination of improved farming technology, utilization / introduction of HYVs' seeds, and rehabilitation and construction of irrigation facilities for paddy. According to the crop cut survey conducted by extension agents in 2001 and 2002, the yield level at production area with good management and improved seeds was 3.3 ton/ha (1.8 - 4.2 ton/ha for 26 plots surveyed) and 3.0 ton/ha for maize (1.6 - 3.6 ton/ha for 41 plots surveyed). The results of the crop cut survey show a potential of yield level in the future. Anticipated yield level at the target year was estimated as follows:

- Paddy: 118 % of present level (present: 2.2 ton/ha → 2.6 ton/ha)
- Maize: 115 % of present level (present: 2.0 ton/ha → 2.3 ton/ha)
- Other cereals*: 115 % of present level (present: 1.0 ton/ha → 1.15 ton/ha)

Note *: Wheat, barley, millet and buckwheat

Anticipated cereal productions based on the above area and yield are given in the following table:

Food Production Plan of Priority Gewogs

(Unit: ton)

	Gangzur		Chaskhar		Drepong	
	Present	2012	Present	2012	Present	2012
Paddy	606	822	153	199	38	52
Maize	695	839	1,027	1,299	352	466
Others*	25	36	58	86	93	129
Total	1,326	1,697	1,238	1,584	483	647

Note *: Wheat, barley, millet and buckwheat

¹ Fallow land occupies 8.1 % and 17.3 % of wet land and dry land respectively in Lhuntse, and 5.9 % and 13.4 %, respectively in Mongar.

(3) Food Security

As mentioned in Chapter 3, the food sufficiency level was estimated to be 200 – 230 kg per capita of milled grain per annum through examination of present situation based on “RNR Statistics 2000” and present population. The milled grain includes seed reserve, animal feed, home-processed cereals and post-harvest losses as well as cereals for food. Population at the target year will increase by 28 % of that at present after 10 years applying the annual growth rate of 2.5 %. Milling recovery rates of cereals are assumed at 60 % for paddy, and 80 % for maize and other cereals. The following table shows milled grain production and milled grain per capita under present condition and future plan.

Per Capita Milled Grain Production in Priority Gewogs

	Gangzur		Chaskhar		Drepong	
	Present	2012	Present	2012	Present	2012
Milled grain (ton) *1						
Rice	364	493	92	119	23	31
Maize	555	671	823	1,039	282	372
Other cereals	20	29	46	69	74	103
Total	939	1,193	961	1,227	379	506
Ratio of rice (%)	39 %	41 %	10 %	10 %	6 %	6 %
Population *2	3,487	4,460	3,095	3,960	1,733	2,220
Per capita (kg)	269	267	311	310	218	228

Note *1: Milling recovery rate is assumed at 60 % for rice, and 80% for maize and other cereals.

*2: Population in 2012 is based on an annual population growth rate of 2.5 %.

8.1.2 Cash Crop

(1) Selection of Potential Cash Crops

Priority cash crops to be promoted in the Gewog were examined based on the opinion of Gewog people, agro-ecological conditions, present production, situation of local and export market and farmers' familiarity with crops. The following table shows priority cash crop identified in the workshop held in the course of the Study.

Potential / Priority Crops Presented by Gewog in Workshop Held by Study Team

Gewog	Vegetable	Fruit / Nut	Others
Gangzur	Chili, Potato,	Orange, Mango, Apple	Cardamom
Chaskhar	Potato, Chili, Cabbage, Radish	Orange, Mango, Plum, Walnut, Apple	Lemongrass, Lac
Drepong	Potato, Cabbage, Radish, Chili, Asparagus	Orange, Walnut, Mango, Apple	Lemongrass, Ginger

Potential and priority crops reported by each Gewog were similar throughout the Study Area. The priority crops should be selected through examination of marketability for the local and export markets. The demand of the local market will be small size in demand. Export commodities will be examined in the future based on the market research carried out by Market System Development Program (Sub-section 8.3.1). Potato and orange, which are presently dominant cash crops in the Study Area, should be promoted mainly at the first stage in all the Gewog. At further stage, crops for promotion should be diversified based on the market research. Finally, it should aim at formation of major production area of special crops in the Gewog taking advantage of agro-ecological condition, improvement of crop management and post-harvesting, and reduction of transportation cost.

Examination of Priority Cash Crops	
Cash crop	Characteristics of cash crop, potential for export and local market
Vegetables	
Potato	The most popular vegetable in the Study Area and suitable for agro-ecological condition; presently exported through Samdrup Jongkhar; relatively high quality; expected stable export but high transportation cost.
Chili	The most popular vegetable in local market; small quantity for export as dried chili; high quality; necessity of market development.
Radish, Cabbage, Vegetable bean, Pumpkin, Turnip, Asparagus	Popular vegetables in local market; difficulty in transportation and maintenance of freshness for export marketing; necessity of market research on export season.
Onion, Carrot	Suitable crops for agro-ecological conditions (temperate); presently imported from India; high market price; potential crop in the future.
Fruits/Nuts	
Mandarin orange	The most popular fruit in the Study Area, exported to India and Bangladesh through Samdrup Jongkhar; comparatively high quality but requires improvement for higher quality and crop management; expected stable export but high transportation cost.
Mango	Popular fruits in humid sub-tropical zone; harvest season in the Area follows to that in India; a potential crop for export but little is exported; low quality and small quantity of products.
Walnut	A popular nut in the Study Area; local variety (hard shell) dominant;
Apple	A major export fruit in Western region of Bhutan; still low quality and small quantity in Eastern region, a potential crop for export in warm temperate zone.
Plum, Pear, Peach	Popular fruits in local market; low quality; difficulty in transportation and maintain freshness to export; necessity of market research and quality improvement.
Persimmon	Mostly local variety (sour); RNR-RC is tackling to improve variety as a potential crop for export to India.
Seed beans/Peas	Beans and peas such as soybean and Rajma bean and lens pea will be potential crop for export in the future; with advantage of low transportation cost to the product value; more land is required for the production; presently little export from Lhuntse; necessity of market research for export.
Other crops	
Lemon grass oil	An important export commodity in the Study Area (collection of wild grass and distillation of essential oil);
Medicinal plants	Growing many kinds of medicinal plants; cultivating some kinds of plants such as Artemisia.
Lac	A famous dyestuff in the Study Area (secretion of insect)
Pine resin	Collecting resin from pine tree.
Ginger	Producing for local market
Cardamom	Trial production in small area; necessity of market research.

(2) Cash Crop Production Plan

As mentioned above, production plan of cash crops was prepared mainly for potato and orange as priority crops of vegetables and fruits. The plan was prepared under prerequisite of improvement of transportation for marketing for export of products. Access to the collection point of depot along motor road will be improved so that it should be reached in no more than three hours either on foot or by horse / mule. The production will be increased as the farm road construction would be promoted. Carrying capacity through the improved access is estimated at 2.0 to 2.5 ton or 50 - 60 baskets per household during marketing period of 6 to 7 months.

Motor roads are available at the Gewog center of Gangzur and Chaskhar, while proposed farm road to Drepong will be constructed in 2007.

Base on the above, production plan is shown in the following tables:

Production Plan of Vegetables in Priority Gewogs				
	Planted area (ha) ^{*1}	Yield (ton/ha)	Production (ton) ^{*1}	Marketing (ton)
Gangzur				
Present	8 ^{*2}	12.5	100	-
2012	55	15	826	689
Chaskhar				
Present	12 ^{*2}	12.5	150	30
2012	64	15	960	842
Drepong				
Present	4 ^{*2}	12.5	50	-
2012	22	15	326	260

Note *1: Including all vegetables
 *2: RNR Statistics 2000

Production Plan of Fruits in Priority Gewogs					
	Nos. of trees ^{*1}	Bearing trees	Yield (kg/tree)	Production (ton) ^{*1}	Marketing (ton)
Gangzur					
Present	2,070 ^{*2}	926	50	46	-
2012	9,443	5,876	80	470	424
Chaskhar					
Present	2,490 ^{*2}	840	50	42	2
2012	8,250	5,250	80	422	382
Drepong					
Present	1,340 ^{*2}	544	50	27	6
2012	4,450	2,520	80	201	179

Note *1: Including all fruits and nuts
 *2: RNR Statistics 2000

Production value and amount sold were estimated as shown in the table below. The cash income increase with the crops of vegetables and fruits is expected approximately at Nu.5,000 to 8,000 per household.

Income per Household from Cash Crops in Priority Gewogs									
	Production (kg/HH)			Marketing (kg/HH)			Price ^{*1} (Nu./kg)	Value (Nu./HH)	
	Vegetable	Fruit	Total	Vegetable	Fruit	Total		Production	Marketing
Gangzur									
Present	218	100	318	-	-	-	3.0	1,113	-
2012 ^{*2}	1,405	799	2,204	1,105	699	1,804	3.0	7,714	6,314
Chaskhar									
Present	374	104	478	75	4	79	3.5	1,673	14
2012 ^{*2}	1,875	820	2,695	1,575	720	2,295	3.5	9,433	8,033
Drepong									
Present	230	124	354	-	24	24	3.5	1,239	84
2012 ^{*2}	1,173	644	1,817	873	544	1,417	3.5	6,360	4,960

Note *1: Numbers of households were estimated assuming a population growth rate of 2.5 % per year.
 *2: Price at collection depots. It is assumed that price at auction yard in Samdrup Jongkhar is Nu.5/kg, transportation and handling charge from collection depots to the auction yard is Nu.1.5/kg for Mongar Dzongkhag, and Nu. 2.0/kg for Lhuntse Dzongkhag.

8.1.3 Backyard Animal

Backyard animal husbandry (pig and poultry) was proposed for income increase and nutritious improvement of rural people through utilizing surplus maize and by-products of home processing for animal feed. This program includes small enterprise by household such as egg production with a scale of more than 10 chickens, or breeding by rearing pairs of pigs. The promotion plan was prepared based on the present conditions of backyard animal husbandry and opinion of Gewog leaders and farmers, and trading at local market in and around the Gewogs. Plan of priority Gewogs is given in the following table:

Plan of Backyard Animals in Priority Gewogs						
	Pig			Chicken		
	Nos. of animals	Ratio of rearing HH	Average nos. per HH	Nos. of animals	Ratio of rearing HH	Average nos. per HH
Gangzur						
Present ^{*1}	464	48%	1.0	1,960	85 %	4.2
2012 ^{*2}	705	60%	1.2	3,500	90 %	6.3
Chaskhar						
Present ^{*1}	350	52%	0.8	1,290	75 %	3.2
2012 ^{*2}	620	60%	1.2	3,050	85 %	6.0
Drepong						
Present ^{*1}	130	45%	0.6	470	61 %	2.2
2012 ^{*2}	330	60%	1.2	1,650	85 %	6.0

Note ^{*1}: RNR Statistics 2000.

^{*2}: Numbers of households were estimated assuming a population growth rate of 2.5 % per year.

Income (production value) per household will be increased to Nu.9,000 per household, which is 170 % - 290 % of that at present level. The income was estimated by the following conditions:

Conditions of Income Estimation of Backyard Animal Husbandry				
	Pig		Chicken	
	Present	2012	Present	2012
Live pig:	Live pig:	Live pig:	Live chicken	Live chicken
120 kg /3 years feeding	120 kg /2.5 years feeding	120 kg /2.5 years feeding	2kg/2 years feeding	2kg/2 years feeding
Nu.50 /kg	Nu.50 /kg	Nu.50 /kg	Nu.50/kg	Nu.50/kg
Nu.2,000/head/year	Nu.2,400/head/year	Nu.2,400/head/year	Nu.50/head/year	Nu.50/head/year
Piglet by breeding:	Piglet by breeding:	Piglet by breeding:	Egg	Egg
5 piglet/year for female	8 piglet/year for female	8 piglet/year for female	60 egg/year/head	80 egg/year/head
Nu.1,000/piglet	Nu.1,000/piglet	Nu.1,000/piglet	Nu.2.5/piece	Nu.2.5/piece
Nu.2,500/head/year	Nu.4,000/head/year	Nu.4,000/head/year	Nu.150/head/year	Nu.200/head/year
Total: Nu.4,500/head/year	Total: Nu.6,400/head/year	Total: Nu.6,400/head/year	Total: Nu.200/head/year	Total: Nu.250/head/year

Income Estimation by Backyard Animal Husbandry							
	Pig			Chicken			Production value (Nu./hh)
	Nos./hh	Nu./head	Nu./hh	Nos./hh	Nu./head	Nu./hh	
Gangzur							
Present	1.0	4,500	4,500	4.2	200	840	5,340
2012	1.2	6,400	7,680	6.3	250	1,575	9,255
Chaskhar							
Present	0.8	4,500	3,600	3.2	200	640	4,240
2012	1.2	6,400	7,680	6.0	250	1,500	9,180
Drepong							
Present	0.6	4,500	2,700	2.2	200	440	3,140
2012	1.2	6,400	7,680	6.0	250	1,500	9,180

8.2 Program for Food Crop Production Increase

8.2.1 Food Security Sub-program

(1) Target

This sub-program aims to attain / maintain food security in the Study Area at Gewog level to catch up with the population increase. Annual population growth rate was estimated at 2.5 % during the 9th FYP by the Planning Commission. By applying this growth rate, population in

the target year of 2012 is estimated at 128 % of present level.

Main staple foods of the residents in the Study Area are maize and rice. Food sufficiency level was estimated at between 200 and 230 kg per capita of milled grain per annum through examination of present situation based on “RNR Statistics 2000” and present population.

(2) Strategy and Activities

This sub-program is closely related with the sub-program of extension strengthening for the food crop (Sub-section 8.5.1), which focuses on activities in Gewog mainly performed by extension agents.

Present yield of food crops are obscure due to unclear statistics on planted / harvested area and production due to lack of accurate measuring and proper registration system. Definite production plans at the national and local level have not been prepared yet. These activities include preparation of food crop production plan based on the systematic survey and analysis of present conditions at Gewog level as well as dissemination of improved crop management through the extension agents.

The contents of this sub-program are carried out under DAO of the Dzongkhag supported by RNR-RC and institutes concerned. The activities are summarized as follows:

- Training of extension agents on improved food crop management, improvement of extension system (demonstration plot, farmers field school), preparation of food production plan for Gewog, and survey of present situation and development potential of food crops,
- Preparation of cereal production plan,
- Preparation of production support plan (extension and input supply),
- Preparation of crop management manual for extension agent and farmers,
- Support to establishment of Food Crop Working Group in each Gewog,

Through the discussion in the workshop and meeting, the proposed activities on the food crop were allocated to this sub-program and the extension strengthening for food crop sub-program (Subsection 8.5.1) with the responsibility of Dzongkhag and Gewog, respectively.

8.2.2 Paddy-rice Production Sub-program

(1) Target

Demand of rice as a staple food is increasing because of the improvement of living standard and population growth. Rice is the main cereal imported in Bhutan. On the other hand, the Study Area is a major production area of maize in Bhutan. Crop management technology of rice growing farmers is still poor compared with major rice production areas such as Paro and Wangdue Phodrang. This sub-program aims at production increase of rice through improvement of crop management, expansion of improved / high yielding varieties, and wet land development.

(2) Strategy and Activities

This program is similar to the food security sub-program (Sub-section 8.2.1) in terms of activities mentioned above. The following activities should be carried out in the sub-program.

- Training of extension agents on improvement of paddy rice cultivation,
- Survey of potential and present yield, area of potential development of wet land /

- irrigation, and
- Preparation of production plan and production support plan (extension & input distribution).

Farmers are eager to increase paddy rice production, however, farming techniques on nursery management and transplanting still remain at low level. Gewogs in southern Mongar produce little paddy rice due to lack of the water resources and irrigation facility.

8.2.3 Irrigation Development Sub-program

(1) System of Execution for Action Plan

National Irrigation Procedural Manual (Irrigation Module) has been enacted and altered by MOA. Rehabilitation and construction of new irrigation facilities are being handled conformed to the Irrigation Module taking into account participatory approach and organizing of beneficiaries' group.

Therefore Irrigation Development Sub-program shall also be basically executed by the beneficiaries under the instruction of Dzongkhag in collaboration with MOA.

(2) Content of Sub-program

(a) National Irrigation Procedural Manual

The outline of National Irrigation Procedural Manual mentioned in “(1) System of Execution for Action Plan” and its formats included in the Manual are as follows:

1) Module 1. Preliminary Investigations

Objectives: A short visit to have meeting with potential water users will be made and preliminary survey will be done to find out whether the proposed project meets basic conditions of government assistance. Project Identification Report (IRRIFORM.02) will be made.

2) Module 2. Multi-Disciplinary Feasibility Study

Objectives: The study aims to cover all aspects of the proposed project in detail to determine whether or not the project is viable and how it can be implemented. Multi-Disciplinary Feasibility Study Report (IRRIFORM.03) will be made.

3) Module 3. Pre-Construction Meeting 1

Objectives: The need of Water Users Association (WUA) with a Committee, the role of men and women in the Committee, maintenance fund, compensation for guard and household labor contribution should be discussed. Finally the WUA and Dzongkhag will confirm and review a Letter of Undertaking (LOU). Formation of Water Users Association (IRRIFORM.04) and Letter of Undertaking (IRRIFORM.05) will be prepared.

4) Module 4. Pre-Construction Meeting 2

Objectives: The water users will elect member of Water Users Association Committee from amongst themselves. They will prepare agreements on compensation

of the water guard, contribution to the maintenance fund, labor contribution for construction and the appointment of a *Lajab* (Labor supervisor). Then water users will sign the Formation of Water Users Association (IRRIFORM.04) and Letter of Undertaking (IRRIFORM.05), which include agreements mentioned above.

5) Module 5. Development of WUA Constitution and Bylaws

Objectives: Water users improve the organization and manage their irrigation system through establishing suitable constitution and bylaws. The constitution describes the organization of water users and bylaws which specify the rules for proper usage and maintenance of the irrigation system. WUA Constitution and Bylaws (IRRIFORM.06) will be made.

6) Module 6. Banking and Bookkeeping Training

Objectives: Irrigation staff should support WUAs to open a bank account for the maintenance fund and train them how to operate it.

7) Module 7. Scheme Management Training

Objectives: This training is held for the water users to know the types of support that the RGOB can give to the WUA for operation and maintenance. Project Completion Report (IRRIFORM.07) and Certificate of Satisfactory Completion (IRRIFORM.08) will be prepared.

8) Module 8. Establishment Period Inspection Visit

Objectives: To monitor and evaluate the condition of the irrigation system, functioning of the WUA, crop productivity and assess the need for further district support. To advise water users how to improve management of the scheme. Establishment Period Inspection Visit Report (IRRIFORM.09) will be made.

9) Module 9. Dzongkhag Water Users' Associations Conference

Objectives: This provides a forum where representatives of different WUAs can present and discuss progress, programs and problems. During the conference measures to overcome certain problems facing the WUAs can be framed jointly by the concerned WUA and the district irrigation sector.

10) List of Forms in the Manual

- IRRIFORM.01: Farmers Request for Government Assistance(Refer to Procedural Manual of NIP)
- IRRIFORM.02: Project Identification Report (Refer to Module 1)
- IRRIFORM.03: Multi-Disciplinary Feasibility Study Report (Refer to Module 2)
- IRRIFORM.04: Formation of Water Users Association (Refer to Module 3)
- IRRIFORM.05: Letter of Undertaking (Refer to Module 3)
- IRRIFORM.06: WUA Constitution and Bylaws (Refer to Module 5)
- IRRIFORM.07: Project Completion Report (Refer to Module 7)
- IRRIFORM.08: Certificate of Satisfactory Completion (Refer to Module 7)

- IRRIFORM.09: Establishment Period Inspection Visit Report (Refer to Module 8)

(b) Sub-program Content

As Irrigation Development Sub-program is actually divided into two types, i.e., rehabilitation and new construction, the Action Plans will also be prepared separately in accordance with the following definition.

Rehabilitation Scheme

This is a rehabilitation program for the existing irrigation facilities requested by the existing WUA. Therefore the action plan will be executed in consideration of that WUA is already established.

New Scheme

A WUA will have to be officially established and irrigation facilities will be newly constructed by the WUA.

8.2.4 Backyard Animal Husbandry Sub-program

(1) Target

This sub-program aims at income increase and nutritious improvement of rural people utilizing household waste, surplus maize and by-products of home processing such as rice bran, oil cake, lees of homemade liquor for animal feed. Through OJT on support for horticulture crop cultivation carried out in the course of the Study, it was confirmed that farmers are interested in backyard animal husbandry. Target setting of the sub-program has been mentioned in Sub-section 8.1.3.

(2) Strategy and Activities

For fulfillment of local demand of livestock products: meat and egg, backyard animal husbandry will be promoted in the sub-program. Some farmers will aim at small-scale enterprise farming as far as animal feed is available. They will raise 10 to 30 of chickens for egg production or several pigs for breeding in and around the Gewog market. The backyard animals will provide materials for preparation of FYM (farm yard manure).

This sub-program will be handled by DAHO and livestock extension agent (EA) in Gewog. DAHO will provide training and support for EAs' activity. The following activities are carried out in the sub-program:

- Training of extension agent on backyard animal husbandry,
- Distribution of improved piglet and chick by Piggery and Poultry Breeding Center (PPBC) in Lingmithang, Mongar,
- Strengthening of livestock extension service through implementation of demonstration farm, farmers field school (FFS) and farmers study tour,
- Encouragement of breeder farmers and breeder farmers' group,
- Establishment of livestock working group in each Gewog aiming at strengthening of administration function of Gewog, and assistance and coordination of EAs' activities.

The training of EAs will be managed by DAHO with support of PPBC and RNR-RC. The training of extension agent will include seminar, workshop and study tour to advanced areas and the research centers.

8.2.5 Post-harvest Technology Training Sub-program

(1) Background

The very conventional post-harvest processing for food crop grains dominates in the Study Area and the mechanization of any type of processing has not been introduced yet at the field level. Therefore, it is reported that the post-harvest losses occur especially during storage in the lowland area, even though the loss assessment study has not been carried out.

However, improvement of post-harvest processing with full knowledge about characteristics of grains is not being carried out. Post-harvest technology is not included in the present extension activities of EAs.

(2) Basic concept

To cope with such situations, the "Post-harvest Technology Training Sub-program" was formulated aiming at the following objectives and strategy.

(a) Objective

The objectives of the Sub-program are to reduce the post-harvest losses of grains and to support food sufficiency of farmers through technical extension program.

(b) Strategy

The basic concept of the Sub-program is as follows.

- ① To formulate the training guideline for the post-harvest technology on grains. Post-Harvest Unit (PHU), which was established lately under MOA, will support preparation of training program and guidance.
- ② The training to EAs will be carried out based on the Sub-program above in collaboration with the staffs of PHU and RNR-RC.

The Sub-program aims to introduce the training and extension on the post-harvest technology into the existing Agricultural Extension System. Therefore, it will be implemented within a year (2004). The training itself will be included in the "Extension Strengthening Program" and the post-harvest technology improvement will be continued and implemented by the strengthened agricultural extension system.

The details of the Sub-program such as the activities and the implementation schedule are shown in the Action Plan Sheet attached.

8.3 Program for Cash Crop Production Strengthening

8.3.1 Market Research Sub-program

(1) Background

Almost all the farmers in the Study Area have very limited chance to receive market information especially on the Indian market. They do not recognize marketable and promising crops and plants of the future. Moreover, the officials concerned such as researchers, administrators and extension officers also have not reached a consensus on prospective crops and plants in the Study Area. As a result, their focus cash crops for

improving and strengthening production and marketing are only the crops that are being popular in the exporting market such as potato, orange, chili and apple.

For the products in the Study Area, and those from four other Dzongkhags in eastern Bhutan, the outlet to the foreign market is basically Samdrup Jongkhar. Two Dzongkhags in the Study Area are geographically situated in disadvantageous locations to three Dzongkhags, namely Samdrup Jongkhar, Pemagatshel and Trashigang.

Outlet to external market in the Study Area is basically Samdrup Jongkhar as the other four Dzongkhags in the eastern region. The two Dzongkhags in the Study Area are geographically disadvantaged location compared to the other Dzongkhags, namely Samdrup Jongkhar, Pemagatshel, Trashiyantse and Trashigang. Transportation cost at Mongar is 1.5 times higher than that of Trashigang, while that at Lhuntse is two times as well.

Under such circumstances, the farmers as well as middlemen in the Study Area are facing difficulties. The question is how they can keep a sound profit in the market and the auction yard in Samdrup Jongkhar in the competition against those products coming from the advantageous Dzongkhags. Such a situation will never change as long as they produce and sell the same products as the other Dzongkhags.

(2) Basic Concept

To cope with such disadvantageous conditions, the "Market Research Sub-program" is formulated with the following objectives and strategies.

(a) Objective

The objective of the Sub-program is to ensure income increase of farmers through introduction of prospective crops and plants that shall create the comparative advantageous condition in the market.

(b) Strategies

To realize the objective, the Sub-program aims to establish the market research system in the RNR-RC East and carry out activities by the following strategies.

- ① To carry out market research not only in local market but also in foreign market,
- ② To assess the potential and competitiveness of local crops and plants that can be produced and gathered in the Study Area.
- ③ To find out the target crops and plants being expected to have higher potential, profitability and competitiveness. For the selection of the target crops and plants, their applied production area shall be considered and specified in view of productivity and marketability. The following measures shall be considered for the selection of products and production areas in view of marketing.

- Expert for plant protection, and
- Expert for plant genetic resources cum aromatic /medicinal plant

The research activities cover fruits / nuts, vegetables, and medicinal / aromatic / spice plants and consist of the followings

- Introduction of new varieties of fruit and vegetables,
- Development of propagation technology,
- Improvement of variety,
- Establishment of farming technology, and
- Potential survey and development of cultivation technology of medicinal, aromatic, and spice plants.

The following facilities and equipment will be constructed or procured for research activities.

- Laboratory and laboratory equipment,
- Greenhouse and equipment to be attached, and
- Research farm equipment.

The Action plan of sub-program was prepared through discussions with RNR-RC East.

8.3.3 Training of Extension Agent Sub-program

(1) Target

Cash crops in the Study Area are produced mainly by traditional way and for home consumption except orange and potato in advanced area. As knowledge level of extension agents on horticulture is still low, capacity building of EAs by training will be necessary in order to provide extension service to the farmers. The scope of training will be wide in range: farming technology, plant protection, crop management, propagation of plants, quality improvement of products, post-harvest, marketing and improvement of extension system such as farmers field school, demonstration plot, etc.

Training facilities in RNR-RC East have not been installed at Wengkhar Center. Construction of the training hall and dormitory, and procurement of training equipment are included in the sub-program.

(2) Strategy and Activities

The EA training will be carried out intensively in RNR-RC East. Trainees group will be organized with around five EAs for a long-term training course. They will principally station in RNR-RC East for two years except the required period for performing their routine responsibility in Gewogs. They will receive on-the-job training in the course of research and development activities of RNR-RC East. Another trainees' group will participate in the long-term training course every year. All the EAs in the Study Area (24 agriculture EAs) will finally participate in the long-term training course during the period of six years.

Beside the above training course, short-term training courses will be provided by RNR-RC East for special subjects such as propagation of seedling, post-harvesting, refreshment training, etc. The subject training will be held twice every year for one week per course. All the EAs are supposed to participate in the training program.

This sub-program will be closely related with Extension Strengthening for Cash Crop Sub-program (Section 8.5.2), so that trained EAs should provide extension service to farmers in Gewogs.

The following experts are necessary for EA training.

- Expert for cash crop development (coordinator including research and development)
- Expert for training and extension,
- Fruit expert (research cum training),
- Vegetable expert (research cum training),
- Expert for plant genetic resources cum medicinal aromatic plant (research cum training),
- Plant protection expert (research cum training), and
- Expert for post-harvest (research cum training).

The following facilities and equipment will be constructed or procured.

- Training hall and dormitory for trainees
- Training equipment such as audiovisual.

8.3.4 Agro-processing Technology Training Sub-program

(1) Background

In the Study Area, the activity called industry has not been established yet. Only some farmers who can buy the machinery have started the service activities for other farmers such as rice milling, corn grinding, and oil extraction. Almost none of the fundamental industries for agro-processing industry, exist in Bhutan. Therefore, the agro-processing industry for export or import substitution is facing a disadvantageous condition compared to foreign competitors in view of production costs. As expected, various imported agro-processing commodities from India dominate the local market.

(2) Basic Concept

As the Study Area is located far from Samdrup Jongkhar as the gate for import and export, it is not advantageous to establish the agro-processing factory for the export or import substitution. Therefore, the Sub-program is formulated for generating small and simple agro-processing activities in the Study Area by targeting the local market for the moment.

(a) Objective

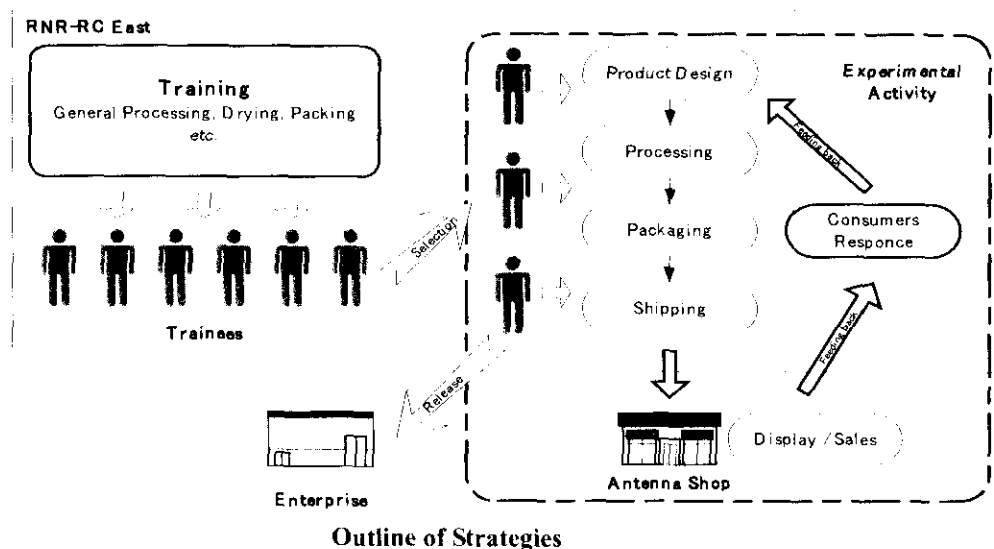
The objective of the Sub-program is to generate and increase opportunity for inhabitants especially women to participate the agro-processing activities and realize an income increase.

(b) Strategies

To achieve the objective, the following strategies were set up and the training and experimental facility will be constructed in RNR-RC East.

- ① To promote family-based small processing activities at village and town level, by spreading general and simple agro-processing and marketing technologies to inhabitants, especially women, through the training program.
- ② To select trainees from the training program above-mentioned, organize a group and incubate small agro-processing enterprises through experimental processing and sales activities. These experimental activities will be carried out by actual development activities from product design to sales in the trial and error way, and

they will develop the products appreciated and accepted in the local market. To sell the developed products and to collect the consumers' responses, a trial sales shop (antenna shop) is necessary that shall be located in a place crowded with consumers. The most suitable place in the Study Area is the center in Mongar town. There, the square is equipped with a weekly market and used for the bus terminal where the local people gather and the passengers from other areas also stop over. Some parts of the market facilities originally planned for meat selling are not in use now. It is recommendable to use the abandoned facility for this shop in cooperation with Dzongkhag and the Municipality Office.



Details of the Sub-program such as the activities carried out based on the strategies above and the implementation schedule are shown in the Action Plan Sheet attached.

8.4 Market System Development Program

(1) Background

In the Study Area, free market mechanism has not been established yet. Moreover, the local market is almost isolated from each other and farmers are facing difficulties to find and expand their market which have impeded the incentives to increase cash crop production.

On the other hand, the local market is very small and limited and will not expand drastically even in the future. Then it will hardly absorb the increased cash crop production extended by the "Program for Cash Crop Production Strengthening" in the future and farmers will have to access to and sell their products more in the external market to ensure income increase.

(2) Basic Concept

Taking due consideration of the difficult situation on the marketing of agricultural products in the Study Area, a comprehensive program consisting of four sub-programs was formulated for improvement of the marketing condition in the Study Area.

(a) Objective

The objectives of four sub-programs are to expand marketing capacity of farmers and to

ensure the income increase following the “Program for Cash Crop Production Strengthening”.

(b) Strategies

To achieve the objectives, the following strategies were set up.

- ① To construct collection depots beside motorable road for assembling of the products of economic quantity for transportation.
- ② To establish management system among organized farmers for assembling their products in order and promoting the buyers’ assembling at a depot.
- ③ To develop the farmers group activity above to make it more profitable and marketable by introducing quality control such as grading and repacking and direct selling to the auction yard in Samdrup Jongkhar.
- ④ To establish the marketing support system for the farmers group activity above that will be carried out by FCB. This system will provide the option of their sales channel other than middlemen as buyers and generate the competitive circumstance among buyers, better for farmers as sellers.

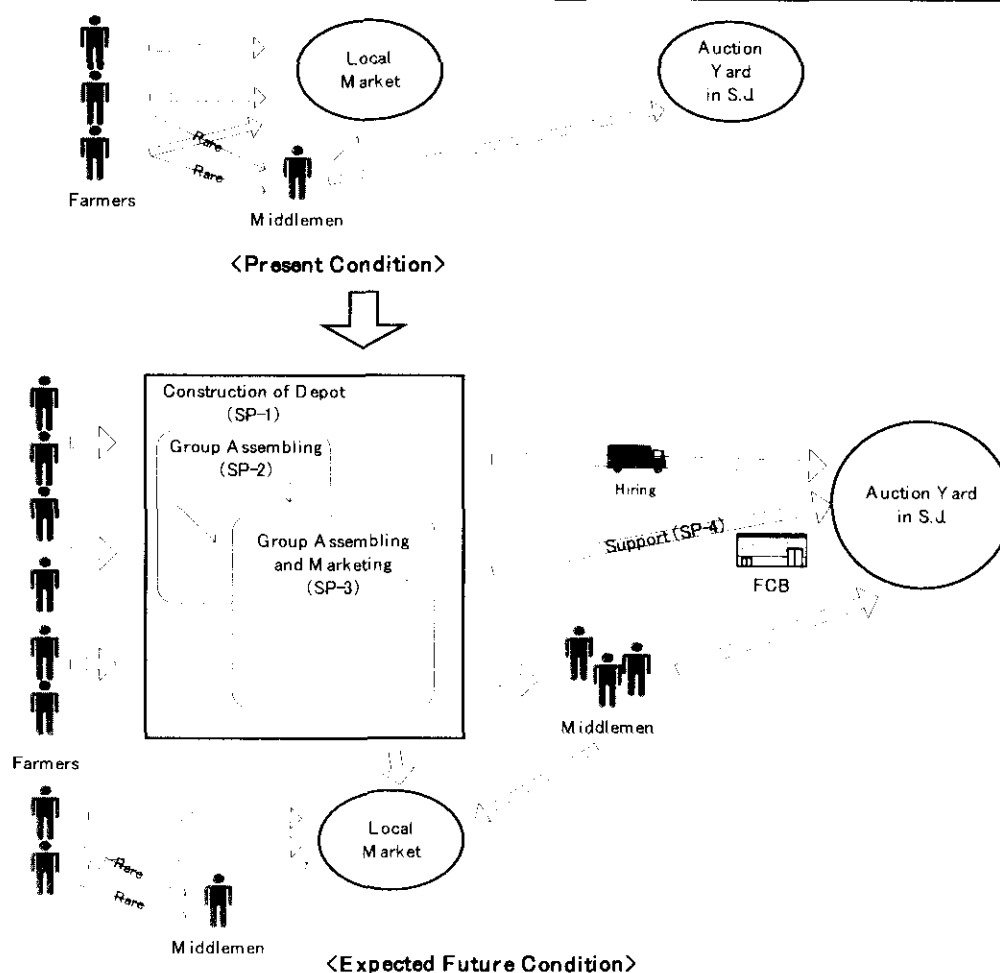
The details of the Sub-programs such as the activities and the implementation schedule are shown in the Action Plan Sheet attached.

(c) Linkage between Sub-programs

To realize the strategies above, the linkage between the activities of four Sub-programs is clarified and shown in the following table.

Linkage of Sub-programs		
Code	Name of Sub-program	Linkage of Activity
SP1	Collection Depot Construction	Provision of collection depot where farmers group activities promoted by SP2 and SP3 will be realized.
SP2	Group Assembling	Provision of group assembling and sales activity among farmers using collection depot constructed by SP1.
SP3	Group Assembling and Marketing	Provision of more sophisticated and profitable activity based on activity by SP2.
SP4	Marketing Support by FCB	Provision of support service by collection, transportation and sales at auction yard in Samdrup Jongkhar for the farmers group activity above.

As the result of the joint operation of the Sub-programs above, the marketing options of the products are expected and abstracted as shown in the figure in the following page.



Expected Marketing Condition in Future Compared with Present Condition

As shown above, the Sub-programs are closely related to each other especially in case of SP1 to SP3. Therefore it is practical that the action plan for these three sub-programs shall be considered together.

On the other hand, these sub-programs aim at shipment by truck and cannot be applied to Gewogs without any motorable road. Existing shed markets in some Gewogs will be used for collection depots without construction of new depots. Since conditions in each Gewog is different, applications are clarified in the following table.

Distribution of Sub-programs by Gewog

Gewogs	SP1	SP2	SP3
Gangzur, Drametse, Mongar, Ngatshang, Saleng	-	○	○
Menbi, Minjay, Tsenkhar, Balam, Chali, Chaskhar, Serimuhang, Tsakaling	○	○	○
Kurtoe, Metsho, Drepong, Thangrong	○	○	-
Jaray, Khoma, Gongduc, Jurme, Kengkhar, Silambi, Tsamang	-	-	-

Seven remote Gewogs are not applicable to the Programs because of no expectation of motorable road construction during the project period. However, it is recommended that these Gewogs also promote formation of farmers group for the marketing activities and they transport their products to the nearest shed market or depot in the neighboring Gewog. The farm mule track that will be constructed in the Farm Road Construction Plan will be effective for this activity. For example, the farmers group in Khoma may join to the group assembling

activity in Gangzur or Menbi.

(3) Stakeholder

Even though the implementation organization of each Sub-program excepting SP4 will be the farmers group, Dzongkhags will be responsible for implementing this Program. Each Dzongkhag will coordinate the execution of Sub-programs and support persons and groups concerned during the implementation of the Program. In Gewog, the Marketing Working Group will be formed among GYT, and promote the Sub-programs and support the farmers group activities. As for monitoring to the Program proceeding, Dzongkhag will be responsible organization especially in the initial stage of implementation and for budget allocation, but the Marketing Working Group in each Gewog will take over it gradually as the farmers group activities will be developed well.

(4) Implementation Schedule

The implementation schedule of the Sub-programs shall be considered by the factors affecting the activities of each Sub-program. The considered factors are listed in the table below:

Considering Factors for Implementation Schedule		
No.	Sub-program	Factors
1	Collection Depot Construction Sub-program	Farm road construction schedule
2	Group Assembling Sub-program	Existence of market and collecting depot
3	Group Assembling and Marketing Sub-program	Time when the quantity of assembled products will exceed 6 tons/ day in each depot.
4	Marketing Support Sub-program by FCB	Time when 10% of marketable products will exceed 6 tons/ collection day among all collection depots and markets.

Thus, the implementation schedule especially starting time of each Sub-program is different among Gewogs due to the factors above.

(5) Expected Participation rate of Farmers

Regarding the three priority Gewogs, namely Gangzur in Lhuntse Dzongkhag and Chaskhar and Drepong in Mongar Dzongkhag, the Study Team had a series of meeting with the Gups, Chimi, EAs, GYT members and representatives of farmers in each Gewog for formulating the Action Plan. The expected participation rate of farmers as the target for this activities was the one of the hot topics. They discussed how they can promote and convince the farmers in their Gewog. Actually, their concluded figures were different to each other as indicated in the table below. It is judged that such discrepancy was due to various background factors such as leadership ability of the Gups and other leaders, distribution condition of farmers' houses and traditional farmers' mindset for collective activities in each Gewog.

Expected Participation Rate in Priority Gewogs		
Gewog	Expected Participation Rate	No. of households of participation
Gangzur	60%	275
Chaskhar	40%	160
Drepong	80%	174

Based on results of the survey and discussions at the priority Gewogs, the average

participation rate as a target of other Gewogs, except seven Gewogs without motorable road, was estimated at 50 %.

(6) Expected Handling Quantity

If the farmers participated in the activities of the Program sell all their marketable cash crop through the depot or the shed market, the handling quantity in 2012 as the last year of the project period is roughly estimated as shown in the following table. In the year, 7,000 tons of the products will be shipped and sold in the Study Area by the Program.

Expected Handling Quantity in Each Gewog (2012)

(ton)									
Lhuntse	Vegetable	Fruits	Total	Handled	Mongar	Vegetable	Fruits	Total	Handled
Gangzur	689	424	1,113	668	Balam	163	115	278	139
Kurtoe	180	102	282	141	Chali	550	284	834	417
Menbi	729	263	992	496	Chaskhar	842	382	1,224	490
Metsho	220	132	352	141	Drametse	1,442	588	2,030	1,015
Minjay	239	289	528	264	Drepong	260	179	440	352
Tsenkhar	363	253	616	308	Mongar	968	332	1,300	650
			Total	2,017	Ngatshang	563	266	829	415
					Saleng	440	359	799	399
					Serimuhung	404	213	616	308
					Thangrong	411	139	550	275
					Tsakaling	697	288	985	493
								Total	4,951
								G.Total	6,969

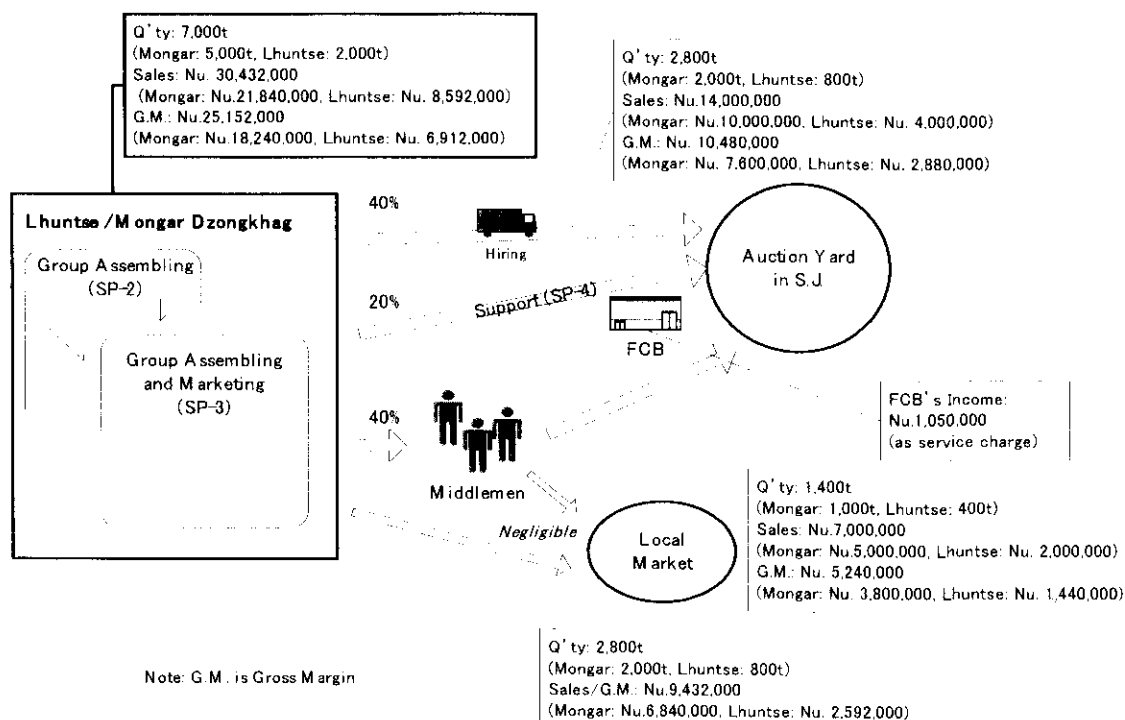
Note: Marketable quantity is estimated and planned by the "Extension Strengthening for Cash Crop SP".

(7) Prospects for Distribution and Sales Amount

According to the handling quantity estimation in 2012, the entire distribution condition and sales amount in 2012 were roughly and tentatively estimated and the following figures were drawn.

The preconditions for sales amount estimation is as follows:

Item	Condition
Sales condition	Direct sales: 40%, Sales to middlemen: 40%, FCB's support: 20%
Unit price for sale to middlemen	10% less than the unit price for direct sales after deduction of transportation costs and costs at the auction yard.
Unit price for direct sales and for FCB support program (SP4)	Nu.5 / kg according to the recent average price of vegetables and fruits at the auction yard in Samdrup Jongkhar.
Transportation costs to the auction yard	Mongar: Nu.0.8 / kg Lhuntse: Nu.1.0 / kg
Costs at the auction yard	Handling charge: Nu.0.25 / kg Service charge: 3% of auctioned amount



Prospects for Distribution and Sales Amount in 2012

The prospects for the three priority Gewogs are as follows.

Prospects for Distribution and Sales Amount of Priority Gewogs in 2012

Gewog	Sales Q'ty (ton)	Sales Amount (Nu.)	S.A./Household (Nu.)	Gross Margin (Nu.)	G.M. /Household (Nu.)
Gangzur	668	2,844,131	10,327	2,288,016	8,308
Chaskhar	490	2,160,630	13,470	1,804,482	11,250
Drepong	352	1,552,126	8,941	1,296,281	7,467

The Program will provide Nu.9,500 of gross margin on the average to participated farmers in 2012.

8.5 Extension Strengthening Program

This program consists of activities in Gewog by extension agent (EA) and Gewog itself. EA is responsible for extension activity in the Gewog, and Gewog is responsible for farmers' participation and coordination of extension activity by EA. The action plans for extension strengthening were prepared through the workshop with Gup, Mangmi and EAs, and discussion with farmers, village leaders and EAs in the Gewog.

8.5.1 Extension Strengthening for Food Crop Sub-program

(1) Target

This sub-program aims to strengthen and improve extension system for food security and production increase of food crops. Food Crop Working Group will be established associated with GYT for effective extension activity and involving of farmers in extension activities as well as strengthening of administrative functions of Gewog under the responsibility of Gup.

EA and the Food Crop Working Group will prepare food crop production plan for the target year including improvement plan of extension activity and input supply based on the

potential survey of food crop production.

(2) Strategy and Activities

Gup in cooperation with EA and DAO should establish the Food Crop Working Group together with groups for cash crop, for livestock and marketing. The group consists of several members including one GYT member at least.

EA will be trained in the sub-program for food security (mentioned in Sub-section 8.2.1) before the implementation of activities of the Action Plan. EA in cooperation with the Food Crop Working Group will carry out activities as follows:

- Potential survey of food crop: Aiming at grasping more accurate / detailed information and potential, EAs will carry out the survey on present situation of food crop production (yield and planted area, food security/ food sufficiency, ratio of paddy production to total cereal production, land use and farmland potential, suitability of improved variety, farmers attitude for production increase),
- Preparation of food production plan and the production support plan: EA and the food crop working will prepare food production plan till the target year based on the results of the above survey.
- Demonstration plot: Demonstration plot for food crops will be set up in farmers' field aiming at demonstration and verification of improved variety and improved cultivation technique. The location will be shifted every year for making more opportunity for the beneficiaries. EAs will periodically visit the plot for providing technical guidance of improved farming. Farming practices will be carried out by the farmers themselves. Seed and chemicals will be supplied free of charge to the demonstration plots.
- Farmers Field School (FFS): FFS aims to encourage and train leader farmers for dissemination of improved farming technology and post-harvesting technology through their voluntary extension activities after participation to the school. Around 15-20 advanced farmers selected from villagers will participate in FFS. FFS will be held once or twice every month at demonstration plots, community school and other facilities. EAs will provide technical guidance to the participants.
- Farmers Study Tour (FST): FST aims to train farmers through investigation and discussion with farmers in advanced areas and with organizations concerned. Gewog or Dzongkhag will prepare FST schedule.
- Group purchase of inputs: Group purchase will be carried out by using micro-credit system of BDFC in Gewog. The inputs required will be collected from the members, and ordered to commission agent (CA). CA will place orders to DSC.
- Seed multiplication: Seed grower farmers will be encouraged with support by DSC in several Gewogs in the Study Area.

8.5.2 Extension Strengthening for Cash Crop Sub-program

(1) Objective

This sub-program aims to strengthen and improve extension system for cash crop production to increase income of farmers. Cash Crop Working Group will be established associated with GYT for effective extension activity and involving of farmers to extension activities of cash crop as well as strengthening of administrative functions of Gewog under the responsibility of Gup.

EAs and the Working Group will prepare cash crop production plan to the target year

including improvement plan of extension activity and input supply based on the potential survey of cash crop production.

Potential cash crops may be selected firstly from popular commodities of present situation of production such as potato, orange, chili, and lemongrass. In the future, the cash crop to be promoted will be diversified or special crops with high advantage to export market according to the market research sub-program will be focused on. (Sub-section 8.3.1)

(2) Strategy and Activities

The activities will be carried out by the same procedures as the sub-program for extension strengthening for food crop (Sub-section 8.5.1). Farmers study tour and group purchase of input will be provided together incorporated with the sub-program for food crop.

8.6 Farm Road Construction Program

(1) System of Execution of the Action Plan

Farm Roads Construction Procedural Manual (Farm Road Module) has been prepared and modified by MOA. Development of farm roads is being executed in accordance with the Farm Road Module applying participatory approach of beneficiaries' group.

Therefore, Farm Road Construction Program shall also be executed by the beneficiaries in accordance with the Farm Road Module under the instruction of Dzongkhag in collaboration with MOA.

(2) Manual of Action Plan

The outline of Farm Roads Construction Procedural Manual mentioned in “(1) System of Execution of Action Plan” and its formats provided in the Manual are as follows:

1) Module 1. Preliminary Investigation

Objectives: A short visit to have meeting with potential farm road users will be made and preliminary survey will be done to find out whether the proposed project meets basic conditions of government assistance. Project Identification Report (FRFORM.02) will be made.

2) Module 2. Multi-Disciplinary Feasibility Study

Objectives: The study aims to cover all aspects of the proposed project in detail to determine whether or not the project is viable and how it can be implemented. Multi-Disciplinary Feasibility Study Report (FRFORM.03) will be made.

3) Module 3. Pre-Construction Meeting

Objectives: The need to form a group/association for construction and maintenance, the role of group/association, maintenance fund and household labor contribution should be discussed in the first part of this meeting. Finally the farm road users will elect a Farm Road Users Cooperative (Committee in the Manual) from amongst themselves. They will prepare agreements on the contribution to the maintenance fund (Annex 1), labor contribution for construction (FRFORM.06) and the appointment of a *Lajab* (Labor

supervisor). Then farm road users will sign the Formation of Cooperative (FRFORM.04) and Letter of Undertaking (FRFORM.05), which include agreements on the above mentioned.

4) Module 4. Implementation

Objectives: To clearly spell out the role of MOA, Dzongkhag and Beneficiaries with regard to implementation of farm roads, actually the following arrangements will be taken up during implementation of the farm road construction.

- Supplying equipment and machinery from RNR Engineering Division (RNRED) based on the requisition of Dzongkhag
- Providing technical backstopping of RNRED as and when necessary
- Beneficiaries shall provide free unskilled labor

5) Module 5. Completion and Handing over of Farm Road

Objectives: This is to make out Project Completion Report (FRFORM.07) and Certificate of Satisfactory Completion (FRFORM.08)

6) List of FRFORM

- FRFORM.01: Farmers Request for Government Assistance for Farm Road (Refer to Module 1)
- FRFORM.02: Project Identification Report (Refer to Module 1)
- FRFORM.03: Multi-Disciplinary Feasibility Study Report (Farm format is not fixed)
- FRFORM.04: Formation of Farm Road Cooperative (Refer to Module 3)
- FRFORM.05: Letter of Undertaking (Refer to Module 3)
- FRFORM.06: Agreement on Labor Contribution (Refer to Module 3, Annex II)
- Annex I : Agreement on Maintenance Fund Contribution (Refer to Module 2)
- FRFORM.07: Project Completion Report (Refer to Module 5)
- FRFORM.08: Certificate of Satisfactory Completion (Refer to Module 5)

8.7 Farm Mule Track Construction Program

(1) System of Execution of Action Plan

As aforementioned in Section 8.6 *Farm Road Construction Program*, Farm Roads Construction Procedural Manual (Farm Road Module) has been prepared and being modified by MOA. Formulation process and procedure of the Action Plan for Farm Mule Track Construction Program is almost similar to that of Farm Road Construction Program except the arrangement of construction machinery and equipment and so on.

Therefore, this program shall also be executed in accordance with the Farm Road Module by the beneficiaries under the instruction of Dzongkhag in collaboration with MOA.

(2) Manual of Action Plan

As Farm Roads Construction Procedural Manual mentioned in “(1) *System of Execution for Action Plan*” should be followed, similar procedure and process in Section 8.6 *Farm Road Construction Program* will be taken for this Program..

8.8 Light-load Bridge Construction Program

(1) System of Execution of Action Plan

As aforementioned in Section 8.6 *Farm Road Construction Program*, Farm Roads Construction Procedural Manual (Farm Road Module) has been prepared and being modified by MOA and the action plan for Light-load Bridge Construction Program is almost similar to that of Farm Road Construction Program except the arrangement of construction machinery and equipment, coordination of DOR and so on.

Therefore this program shall also be executed in accordance with the Farm Road Module by the beneficiaries under the instruction of Dzongkhag in collaboration with MOA and DOR of MOC.

(2) Manual of Action Plan

As Farm Roads Construction Procedural Manual mentioned in “(1) *System of Execution of Action Plan*” should be applied for the formulation of the Action Plans as Farm Road Construction Program and Farm Mule Track Construction Program.

8.9 Construction Machinery Center Program

Construction Machinery Center Program (CMCP) is a program to support the Farm Road Construction Program (FRCP) by; i) procurement of construction machinery, ii) procurement of equipment for maintenance, and iii) capacity building of operators and mechanics of Central Machinery Unit (CMU) of MOA at Jakar, Bumthang.

(1) Stakeholder

CMU/MOA will be the sole stakeholder of the program. MOA takes the responsibility to arrange or find inputs to the program such as finance resource, manpower, land for required workshop, etc. CMU will implement the program itself.

(2) Program / Sub-program

(a) Procurement of Machinery and Equipment

As mentioned in Sub-section 5.4.3 “*Outline of the Program*”, two fleets of construction machinery and equipment for maintenance (Table 5.4.1, 5.4.2, 5.4.3) will be procured.

(b) Capacity Building

Though there are sufficient number of operators, drivers and mechanics who were trained in the course of the Paro Valley Agricultural Development Project, intensive training on operation and maintenance for them should be carried out for the newly procured machinery and equipment. A long-term expert will be arranged for the capacity building. Contents of the capacity building program are mentioned in the table attached to the Action Plan of the Program.

(c) Related Infrastructure

Workshop for the machinery and equipment will be constructed at the left bank of the Chamkhar River. MOA has already allocated land and necessary budget for construction of the workshop with four (4) bays.

(d) Period

RGOB has requested for grant aid for the procurement of machinery and equipment. Preparatory works such as basic design study and clearance will be done by mid-2004 and the related infrastructures will be completed by that time. CMU workshop will be operated with new machinery and equipment at the beginning of the year 2005. Then capacity building of CMU staff will be started half year after the commencement of the operation.

(3) Implementation Organization

Central Machinery Unit is situated under Farm Road Section of DRDS/MOA. CMU is located at Bumthang with construction machinery and equipment of MOA. For farm road construction, operational cost of the machinery will be spared from the implementation budget that will be allocated to Dzongkhag or Gewog by MOF. Dzongkhag engineering section and CMU will coordinate allocation of construction machinery and operators according to the implementation schedule of the proposed farm road.

Arrangement of land and contract for the workshop construction will be managed by DRDS itself, and capacity building of the operators and mechanics as well.

(4) Required Action and Schedule

As mentioned above, procurement of the construction machinery and equipment is supposed to be done by using of external resources. Experts for the capacity building of operators and mechanics are also from external resources. Since this program has to be implemented in the earliest stage for the farm road construction, it is quite important for MOA to take actions on financing for the procurement. Moreover, it was confirmed that related infrastructures and manpower for the workshop, operation and maintenance should be owed by MOA itself. Thus, construction of workshop along with necessary utilities such as water supply, fencing, electrification should be done properly prior to the procurement. Capacity building, namely, training on O&M of machinery should be started some time after starting the operation.

(5) Implementation and Monitoring System

Overall progress management and monitoring of the Action Plan will be undertaken by DRDS. Budget management at the preparatory stage will also performed by DRDS. Once the program is implemented, actual budget management will be done by the chief of CMU. O&M budget will be allocated from the "rental charge" included in the implementation budget to Dzongkhag or Gewog. Such inter-ministerial arrangement will be managed by DRDS or PPD of MOA. DRDS will be the key organization to manage and solve the problems that might occur in the course of the Action Plan.

Chapter 9 CONCLUSION AND RECOMMENDATION

9.1 Conclusions

(1) Components and Target of the Master Plan

The Master Plan Study aimed at formulation and selection of appropriate development plans in the Study Area that will be model plans for other Dzongkhags in the eastern region of Bhutan. The Study identified the following plans, programs and sub-programs.

Regional Agriculture Development Plan (RADP)

- 1) Program for Food Crop Production Increase (PFCPI)
 - a) Food Security Sub-program
 - b) Paddy Rice Production Sub-program
 - c) Irrigation Development Sub-program
 - d) Backyard Animal Husbandry Sub-program
 - e) Post-harvest Technology Training Sub-program
- 2) Program for Cash Crop Production Strengthening (PCCPS)
 - a) Market Research Sub-program
 - b) Technical Research and Development Sub-program
 - c) Training of Extension Agent Sub-program
 - d) Agro-processing Technology Training Sub-program
- 3) Market System Development Program (MSDP)
 - a) Collection Depot Construction Sub-program
 - b) Group Assembling Sub-program
 - c) Group Assembling and Marketing Sub-program
 - d) Marketing Support Sub-program by FCB
- 4) Extension Strengthening Program
 - a) Extension Strengthening for Food Crop Sub-program
 - b) Extension Strengthening for Cash Crop Sub-program

Farm Road Development Plan (FRDP)

- 1) Farm Road Construction Program (FRCP)
- 2) Farm Mule Track Construction Program (FMTCP)
- 3) Light-load Bridge Construction Program (LBCP)
- 4) Construction Machinery Center Program (CMCP)

Regional Agriculture Development Plan (RADP) aims at; i) improvement of food self-sufficiency at each Gewog and ii) improvement of cash income and living standard of rural population through increase of cash crop production and market system development.

Farm Road Development Plan (FRDP) aims at improvement of accessibility to the market of agricultural products and social services in order to support the improvement of cash income

and living standard of the rural population.

(2) Project Evaluation

According to the project evaluation focusing on; i) economic and financial aspect, ii) technology and capacity of stakeholders, iii) social aspect, iv) demonstration, model and ripple effect, and v) sustainability, the Master Plan was justified even with low economic viability of EIRR 7.7 %. The farm road and agriculture development will bring significant impact and effect to the rural society and population through improvement of physical accessibility to various services, not only agriculture but also others such as education, health, governance, electrification, which are prerequisite and fundamental for integrated regional development. Improvement of the living standard and productivity in the rural area will decelerate “rural-to-urban migration” and generate opportunity for earning cash income of the rural households. The rural-to-urban migration will cause degradation of the natural resources and poor productivity lacking proper maintenance of the resources. Moreover, the proposed basic approach of the agriculture development that would absorb population increase in the rural area through cultivation of present fallow land will maintain labor balance or relieve the farmers from the burden of heavy work load through improvement of agriculture productivity. Such approaches and concept of the proposed project in the Study Area can be applied to other rural areas in Bhutan.

(3) Justification of Development Approaches

Some of the Master Plan components and approaches were experimentally implemented in the course of the Study.

“Farm road construction seminar” was conducted aiming at evaluation of participatory implementation of farm roads with labor contribution of beneficiaries. Part of the proposed farm mule track at Khoma Gewog in Lhuntse Dzongkhag was constructed.

“Horticulture crop production support” was conducted in several Gewogs in Lhuntse and Mongar Dzongkhags. Piglets and vegetable seeds were distributed to individual and group farmers to confirm capability of vegetable cultivation and backyard animal husbandry of the farmers, and capacity of extension staff of Dzongkhag.

“Small-scale irrigation support” was carried out at three locations in Lhuntse and Mongar Dzongkhags to confirm applicability of small engine pumps for irrigating seedlings of fruit trees and vegetables.

It was confirmed that; i) labor contribution by the beneficiaries, ii) group activities, iii) strengthening of market-oriented cash crop production are applicable in the Study Area.

(4) Accountability of Local Institutions

Technology transfer was done throughout the Study period in an on-the-job training manner on not only survey and planning but also implementation. It was confirmed that the existing institutions related to development activities such as Dzongkhag and Gewog Development Committees (DYT, GYT), Dzongkhag Administration, RNRRC-East have sufficient capacity or good potential to promote or implement the development projects with proper guidance of Dzongkhag to DYT or GYT, and MOA to Dzongkhag.

(5) Action Plan

Action Plans were formulated for all the programs and sub-programs in the Master Plan for

the following objectives:

- To acquaint stakeholders with details of the program / sub-program, such as target, activities, input, output,
- To identify necessary actions that are prerequisite for achieving the targets,
- To understand responsibility and roles of each stakeholder on the above actions and schedule one another,
- To monitor and maintain implementation of the Action Plan, and
- To realize transparency of the process of the formulation and implementation.

Priority Gewogs were selected in order to formulate concrete action plans for the programs and sub-programs related to Gewogs. Action plans of fifteen (15) sub-programs of RADP and four (4) programs of FRDP were jointly formulated with related stakeholders, namely, beneficiaries, Gewogs, Dzongkhags, MOA and DOR, who agreed their own roles and responsibilities to implement the programs or sub-programs.

(6) Guidelines

For “Non-priority Gewogs”, a guideline titled “Guideline for Formulation of the Action Plan” was prepared in order to support the formulation of the action plans by Gewogs. “Action Plan Sheet” was prepared to realize transparency, comprehensive formulation and easier modification of the action plans.

“Light-load Bridge Guideline” was also prepared as a technical guideline for design, construction and maintenance of suspension bridges with bigger capacity for power tiller with cart, because the light-load bridge is a new type of suspension bridge not only for MOA but also for DOR. On-the-job training with the guideline was conducted in the course of the Study and necessary technology was transferred.

9.2 Recommendations

(1) Early Implementation and Budget Arrangement

Considering the Master Plan Period (2002/03 ~ 2011/2012) and high viability and impact of the project, early implementation of the project is recommended in accordance with the Action Plans. The Master Plan was formulated in close linkage with the 9th Five Year Plan. Due discussion was made with not only stakeholders but also officials of RGOB concerned. The Master Plan and Action Plan were formulated involving the beneficiaries and other stakeholders who have understood their responsibilities and roles for implementation of the project and are ready for taking the actions. It is strongly recommended that RGOB should arrange necessary budget for the implementation either by the own resources or by the external resources, then accelerate implementation of the project from the beginning of the 9th Five Year Plan. Even with the external resources, certain counter budget and manpower are required. Such internal resources should be arranged and maintained for the implementation. Financial request for some components of the Master Plan have been already made. Follow-up and monitoring of the financial arrangement should be undertaken properly.

(2) Implementation of Related Projects

The feeder road from Gyelposhing to Nganglam (Mongar) and the road bridge of Tangmachu (Lhuntse) are planned to be constructed or reconstructed by DOR. Construction of these road and bridge should be implemented earlier because some of the proposed farm mule tracks will start from the feeder road itself, and the bridge will provide sufficient capacity for

construction machinery and equipment to pass through.

(3) Arrangement of Labor Contribution

The project will be implemented through “participatory approach”. Labor contribution by the beneficiaries is the prerequisite and conditionality for the implementation. However, taking special situation of Bhutan, namely, labor shortage and heavy work load of farmers mainly due to the poor access, magnitude of labor contribution should be decided by the beneficiaries or GYT themselves. Construction period should be modified flexibly according to the availability of labor force. The labor contribution by women and the weak should be carefully introduced so that the project implementation should not increase their burden upon them. According to results of interview survey to the farmers that participated in the construction of the farm mule track at Khoma, most of the participants replied that women should be exempt from the labor contribution or women should do only light work. However, on the contrary, participation in the social activities may enhance position of women and promote involvement of women in the society. In this context, reduction of work load through mechanization and/or application of sharing of household and on-farm works should also be introduced positively.

(4) Utilization, Monitoring and Modification of the Action Plans

The Action Plan formulated in the Study should be authorized and kept by each stakeholder for further step of the programs and sub-programs. The Action Plans are not either final or completed ones. As mentioned in the “Guideline for Formulation of Action Plan”, the Action Plans should be monitored and modified all the time in accordance with changes of situation on the program / sub-programs. Each stakeholder should pay due attention on the status of the program / sub-programs and make necessary modification for smooth implementation.

(5) Formulation of the Action Plans for Non-priority Gewogs

In this Study, only three Gewogs (out of 24 Gewogs) were selected for formulation of the Action Plan. It is recommended to formulate the Action Plans for the remaining Gewogs with full use of the Guideline for Formulation of Action Plans and experience of Dzongkhag and the priority Gewogs.

(6) Procurement of Construction Machinery

Procurement of construction machinery and equipment is the prerequisite for implementation of the Farm Road Development Plan or Farm Road Construction Program. Mandate of farm road construction has been transferred from DOR to MOA, but MOA does not have enough construction machinery and equipment for the farm road construction. Furthermore, the machinery of DOR can not be used properly for the farm road construction because of difference of specification of the machinery and condition of construction site. Taking into consideration importance of the machinery and labor shortage condition of Bhutan, especially in the rural areas, it is strongly recommended to procure the construction machinery and equipment as soon as possible to realize smooth commencement of the project. Capability of MOA in operating and maintaining the construction machinery was confirmed sufficient with counter budget and manpower.

(7) Overall Project Management

The programs and sub-programs of the Master Plan will be able to be implemented separately or independently by using different resources. However, it is recommended to allocate one implementation setup (project management) to make overall management of RADP-LM and

FRDP-LM.

(8) Integrated Development

Off-farm income of the farm households occupies half of the total income on the average. Although the Master Plan was formulated on the agriculture and farm road development aiming at increase of agriculture income of the rural households, development for enhancement of off-farm income should also be considered. Some of the off-farm income will be increased through access improvement by the project, but specific activities to enhance the off-farm income itself should be considered; such as vocational training, cottage industry, etc. Moreover, basic necessities for living such as drinking water, electricity, etc. should also be fulfilled. Rural electrification, health care, and rural water supply will significantly improve the rural living condition along with farm road development. Primary and secondary education will be a long-term and fundamental necessity for supporting capacity building of rural households. Development components beside agriculture and farm road construction should be promoted in an integrated manner.