

Chapter 6

Priority Projects

Chapter 6 Priority Projects

The detailed contents of the selected six projects are described in this chapter. The early realization of these projects is strongly recommended.

6.1 Project on Improvement of Post-harvest Processing (Project No.2)

Development target: 3. Improvement of post-harvest quality control of rice

6.1.1 Purpose and Background/Rationale

How serious is the loss? How does the present rice quality affect the agricultural economy, etc? The present conditions of post-harvest processes are not sufficiently known. This creates difficulties in assessing and guiding improvement on post-harvest processing. The infrastructure for information and dissemination (extension system) is weak. The technology for post-harvest rice processing is closely related with the cultivation technology, cultivation method, quality of rice, marketing conditions, market requirements, etc. Their influence on agriculture and marketing of agricultural produce is quite large and it requires a comprehensive technology level and experience. Extension activities in the field of technical matters and in the management of the post-harvest rice processing business including custom milling are extremely important. Extension and guidance can be expected to reduce losses in the rice field and improve quality in the drying and milling process. The expansion of the extension services system is to be given priority, in order to improve the technology and system of post-harvest rice processing, and to allow the following:

(1) Extension of post-harvest rice processing technology

There is no government department/section in charge of the extension services. Therefore, the actual conditions of quantitative and qualitative loss, paddy quality, seed paddy, custom milling are not well grasped. Due to a lack of a government department, there are no improvement policies and no extension activities are disseminated to farmers and custom rice millers.

Our first suggestion is to set an improvement promotion section for post-harvest rice processing (tentative name) in the MAFF, which will be in charge of improvement works concerning technology of post-harvest processing. Their first task will be research to grasp current conditions: this will allow them to chalk out counter-measures according to the current situation up down to monitoring to meet the result of guidance with the cooperation of DAFF.

(2) Reduction of loss

Unexpectedly, considerable losses are caused in the post-harvest processes. Currently, there is not any data on quantitative loss, and effective measures to cope with the situation can not be taken. There is no way to assess how greatly qualitative losses affect quantitative losses and the resultant economic damage.

This study assessment has estimated about a 7% loss. Improvements can be made by measures that would require no monetary outlay; these measures would effectively reduce the loss by approximately 0.5 to 1.0%. There are many areas that should be studied, planned, executed and extended such as: reduction of qualitative loss, quantitative loss by agricultural machinery, labor and expenses required for reducing losses, etc.

(3) Improvement of quality

Information on paddy/milled rice quality improvement obtained through post-harvest processing technology is not fed-back to farmers and custom millers. It is most important to start improvement activities through the most economical means as soon as the present deficiencies are uncovered. If farmers are not adequately informed, they might oppose changes if they believe they will require additional labor and expense. But if the produce were cleaned (removed dust and vain paddy) better, it would store better and lead to an automatic improvement in the quality of the milled rice. (For example, immature grains and the like would be broken in some milling processes and ultimately result in a loss). Separated grains may not always be wasted. They should be milled separately. Miscomprehension of these issues by farmers' lowers rice-quality. This activity would provide by showing immediate positive effects and could be a showcase for extension activities.

(4) Improvement in post-harvest seed processing technology

Breeding improvement and education of seed producing farmers are supposed to be outside the scope of this plan. However, as mentioned previously, post-harvest processing of seed and techniques in drying, cleaning, and storage are supposed to be within the scope of this plan. Slow and careful drying, bold cleaning, storage with moisture control shall be the objects of guidance in extension work. Guidance will be necessary for such cases in the use of a separator machine by the village, including advice on handling the equipment, and the method of procurement. The main purpose is the continuous fostering of superior varieties among conventional varieties.

(5) Extension for quality control

Concerning the above (2) ~ (4), it is necessary to guide the main policies comprehensively

considering the physical properties of paddy, cultivation and its botanical characteristics. Good quality control of rice covering all stages of post-harvest processes can not be executed based on the technologies currently utilized in the country. Presently, the quality control technologies in post-harvest processes are not appreciated from this perspective and therefore pertinent extension activities are not conducted.

After quality standards are enacted, the quality of milled rice and the milling yield shall be determined by the quality of paddy in the future. Under this situation, it would be easier to understand how prices are reflected by the quality. This plan is to be the first step in creating this situation. The reduction of loss and improvement of rice quality are important, but the quality control that enables one to see that improvement targets are met must be carried out by conducting comprehensive technical guidance covering the post-harvest processes. As the reduction of losses and the quality improvement proceed, they will reduce the rate of loss in the production. Amendment of the coefficient value used in the regular calculation of demand/supply balance shall be necessary in accordance with the change of conditions. There will be an obligation to offer an accurate value of the coefficient.

(6) Technical improvement for custom milling, enactment and extension of milling charge system

MIME is in charge of registration by custom millers accompanied by installation of machinery. There are many custom millers and the total quantity of rice milled by them is 2,100,000 tons (equal to 75--80% of total milling in Cambodia). They occupy an important position in the whole rice industry of Cambodia.

However, each rice mill is so small that it can not be an object of interest to MIME. There is little information and guidance on the actual condition of the custom milling industry, its technical level, future prospects, problems if any, etc. which are necessary for the proper development of the custom milling industry. The government of Cambodia does not grasp the actual condition of whether the milling yield and the degree of milling are appropriate and fair to users (farmers) and whether or not the number of custom mills are excessive, etc.

The guidance for custom rice millers shall be conducted during the post-harvest processing phase. Technical guidance for users on the cleaning of paddy before milling and for millers on the use of rubber roll type husking shall be conducted. It should be made easier for users to judge the fairness and quality obtained from millers by clarifying the present vague milling charge system while continuing the present use of by-products, except in the special circumstances of remote areas. In their case also, monitoring shall be conducted and it is necessary to set new targets after grasping their situation.

Cash transaction utilizing by-product in the milling

In order to promote fair transactions, cash transactions must be introduced to promote transparency and increase user choice. However, there may be many users who do not have cash on hand. A system displaying the cash value of by-products is therefore required. Transactions by fixed charge on all custom milling shall be promoted as much as possible by clarifying the value of milling work and showing the cash value of by-product and milled rice as follows:

- 1) Display the milling charge in front of rice mill (paddy weight basis)
- 2) Display the evaluated value of by-products and milled rice in front of rice mill (degree of milling basis)

Milling fee and price of product and by-products

Milling fee:			
Milling degree	Milling fee		Remarks
		Riel/kg	
		Riel/kg	
		Riel/kg	
Today's price of rice and by-products:			
Kind of rice	Variety/ by-products	Price	
Paddy		Riel/kg	
		Riel/kg	
Brown rice		Riel/kg	
		Riel/kg	
Product (milled rice)		Riel/kg	
		Riel/kg	
By-products	Bran	Riel/kg	
	Broken	Riel/kg	
	Husk	Riel/kg	
	Crushed husk and broken	Riel/kg	

In this case, each custom mill can decide freely the fees and prices.

6.1.2 Contents of the Project

(1) Area covered by the Project

Covering the whole Cambodia. Phnom Penh is as the hub.

(2) Beneficiaries

- 1) Farmers.
- 2) Traders and rice millers (indirect).

(3) Implementing agency

Department of Planning, Statistics and International Cooperation, MAFF

(4) Main activities

- 1) Extension of post-harvest processing technology.
- 2) Establishment of a department in charge of collecting information and extension of post-harvest processing technology.
- 3) Introduction of quality standard of rice and guidance for quality improvement.
- 4) Information services on rice prices.
- 5) Sketching out and execution of training program of manpower for the executing organization
- 6) Guidance on the method of calculating demand/ supply balance

(5) Outline of required input

- 1) Detailed design/execution
 - a) Study/ detailed design staff members: 3 persons for 8 man-months.
 - i) Post-harvest process : (1 person) 3 M/M
 - ii) Agricultural machine/ handling equipment : (1 person) 3 M/M
 - iii) Building equipment/procurement/estimation : (1 person) 2 M/M
 - b) Machine/equipment:
 - i) Machine/equipment for rice inspection, post-harvest processing and for extension: a complete set.
 - ii) Modification of existing building (Remodeling of existing building for the housing of machines and equipment and inspection room of rice quality) : all necessary work
- 2) Extension and guidance
 - a) Extension staff: 3 persons for 22 man-months
 - i) Agricultural machine/processing machine : (1 person) 12 M/M
 - ii) Agricultural machine/handling equipment : (1 person) 5 M/M
 - iii) Quality control of rice : (1 person) 5 M/M
 - b) Modifying of existing building (Remodeling of existing building as office(s) for post-harvest processing extension activities).
- 3) Estimated total
 - a) Total staff members: 30 M/M
 - b) Total estimated cost: US\$1,500,000

6.1.3 Pre-condition, External condition and Risk

(1) Pre-conditions and External conditions

- 1) Smooth administrative procedures for legislation, etc. in Cambodia
- 2) Understanding of MIME.
- 3) Cooperation from rice millers and rice traders
- 4) Cooperation from mass-media
- 5) Securing of necessary funds

(2) Risks

Reaction of farmers and custom millers is indispensable

6.2 Open Paddy Market Project (Project No.3)

- Development Targets :
1. Stable and balanced regional supply-demand
 2. Reasonable price mechanism under modern business system
 3. Improvement of post-harvest quality control of rice
 4. Development of rice border trade

6.2.1 Purpose and Background/Rationale

Open paddy market project unifies an idea of paddy market project for the circulation of domestic marketing and an idea of border market project for the circulation of neighboring countries. The project has the following five purposes. The background and rationale for every purpose are summarized as follows.

1. Formation of Open Index Price

Price formation is performed in the closed business connections between the individual to individual. Enhance the efficiency and fairness in the pricing, by establishing the public open markets at the production areas and/or at the key points of rice marketing where prices will be made by many buyers and sellers. The open prices formed in such markets will work for reducing the price imbalance among the regions. Especially the price formed at Bat Dambang will serve as a nationwide index price.

2. Strengthening Market Information Service

The open index price formed at paddy markets will be an important price information. By adding this information into the contents of radio program of MAFF/AMO, present information service will be upgraded.

3. Widen the Outlets of Farmer and Paddy Trader (Middleman)

In the paddy sales, farmers are generally in a disadvantageous position due to limited opportunity to meet the numbers of buyers, limited capability to evaluate paddy quality, limited information resources, and the small scale of production for sale. Paddy traders also have limited outlets for their paddy. Paddy market will provide farmers and paddy traders an opportunity to meet better buyers. Moreover, with the function of assembling the varieties of small lots in the paddy market, the higher selling price can be expected.

4. Improvement of Quality Control of Paddy

With the function of providing the quality control service to paddy buyer in the market, the efficient quality control of large amount of paddy can be achieved. Moreover, by providing the quality inspection service at the paddy market, farmers will be aware of the actual quality of their paddy clearly and will be able to stand on the start point of quality improvement activities.

5. Introduction of Quality Standard of rice

Price gaps of paddy among varieties are smaller than the price gaps of milled rice in urban markets. Moreover, in the paddy trade, it is hard to say that paddy quality is evaluated properly and reflected in prices because the quality is seldom evaluated with the numerical index.

By giving the function of the quality inspection service with the introduction of rice quality standard in the market, enhance the proper pricing in the paddy trade, i.e. the economical incentive to farmers for quality improvement activities.

In paddy border trading, promote the sales by showing and proving the paddy quality to buyers positively.

Many commercial rice millers of RMA member made the study tour to Thailand with the assistance from EDC and have visited the paddy markets in Thailand. Needs of rice millers on the paddy market have been confirmed by the effectiveness of quality-wise and variety-wise paddy procurement and by the advantage of the improvement of paddy quality in the procurement.

6.2.2 Basic Concept

Using the paddy markets in Thailand as a reference model, introduce the open paddy market that suited the actual condition of Cambodia.

(1) Scale of the Project

The important rice production areas/provinces with surplus rice shall be the object areas for this project. Fundamental conditions for the market establishment are surplus production in district level, existence of commercial rice mills and paddy traders who will be main buyer and good accessibility from surrounding areas. Following locations are assumed to fulfill these conditions.

Province	Candidate Location 1	Candidate Location 2	Provincial Surplus in 1999/2000 (x 1000 ton)
Bat Dambang	Bat Dambang district, around the junction of NR57 and NR5	Moung Russei district, near/along NR5	57.8
Banteay Mean Chey *	West of Sisopne alongside of NR5	South of Sisopne alongside of NR56	33.2
Siem Reap	Kralanh district, near NR6 or NR68	Chi Kraeng district, near/alongside of NR6	12.2
Pursat *	Alongside of NR5		10.8
Kampong Chhnang	Rolea Bier district along NR5 or NR53		12.9

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Province	Candidate Location 1	Candidate Location 2	Provincial Surplus in 1999/2000 (x 1000 ton)
Takeav	Around Takeav town	Angkor Borei port	159.6
Prey Veang	Peam Ro district or Alongside of NR1 at crossing points with waterway to Vietnam	Between Prey Veang town to Kg. Cham (alongside of NR11)	146.4
Svay Rieng	Alongside of NR1 at crossing points with roadway to Vietnam		61.1
Kampot *	Alongside of NR3		74.7

* : surplus provinces out of the Study area

(2) Procedures for Project implementation

1) Phased introduction of the paddy markets

Open paddy markets are widely dispersed at about 70 places in Thailand and it is judged as an effective means of improving the rice marketing system. Despite this fact, phased introduction of the paddy markets should be planned to make sure the feasibility of the project because there are many differences between Thailand and Cambodia in social/economical situation, in human/financial resources of governmental institutions. The advantages of phased introduction are as follows.

- Reduce the investment risk
- Monitor and evaluate the validity of a paddy market in Cambodia with a test case in F/S and a pilot project, and feed back the results into the planning of the next stage.
- Utilize the trained personnel and the established facility in a test case in F/S and a pilot project for training of personnel required for the next stage.

2) Outline of activities in each phase

Phase 1: Feasibility Study

Confirm the government policy on the contents of the project, and prepare the TOR

Implementation of the Feasibility study

- Examination of the validity of a paddy market with a test case
- Determination of operating agency, and planning of personnel training program
- Planning of overall program of the open paddy market establishment
- Planning of pilot project for model paddy market

Phase 2: Pilot project

Training manpower for the operating agency

Establishment of operating agency and its management system

Design and Procurement of facility/equipment for model paddy market

Operation of model paddy market

Evaluation of the pilot project, and feedback the results into the overall program of the open paddy market establishment

Phase 3: Extension of the open paddy market system

Establishment of markets facility/equipment in line with the overall program of the open paddy market establishment

Personnel training of the operating agency

Establishment of operating agency and its management system

Monitoring of implementation of overall program

Monitoring and evaluation of the overall program

(3) Functions of market and content of facility

1) Incentive to market users

It is essential to secure a smooth access to/from the trunk national road and major areas of surplus production. Moreover, it is necessary to realize the under-mentioned benefits for each market user.

Market user	Benefits
Buyer : Commercial rice miller, Middleman/Paddy trader	Can buy anytime: Can buy large quantities variety-wise and quality-wise: Price corresponding to quality.
Seller : Farmer, Middleman/Paddy trader	Can sell anytime: Immediate cash payment: Can sell even small quantities: Price corresponding to quality: Chance for better price (chance to see many buyers: chance to have better price even for minor local varieties and small quantity of product)

2) Function and Facility/Equipment of the market

Following functions and facility/equipment shall be necessary, to realize the above-mentioned incentive and the purposes of the project.

Purpose	Function	Facility/Equipment
Formation of Open Index Price	- Declaration system of transaction (price and quantity) - Collection of data (price/quantity) of transactions made in the market	- Communication apparatus - Data store/processing apparatus - Office equipment
Strengthen of Market Information Service	- Immediate distribution system of collected data - Report the collected information to MAFF/AMO	

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Purpose	Function	Facility/Equipment
Widen the Outlets of Farmer and Paddy Trader	<ul style="list-style-type: none"> - Market information services on other areas - Weight measurement services - Purchasing small lots - Temporary storage services - Quality inspection services - Transportation services 	<ul style="list-style-type: none"> - Track scale and other weighing equipment - Warehouse - Information bulletin board - Truck
Improvement of Quality Control of paddy	<ul style="list-style-type: none"> - Handling by variety-wise - Quality control services (drying service) - Storage function - Assembling small lots by variety 	<ul style="list-style-type: none"> - Drying yard/roof area - Bulk handling equipment
Introduction of Quality Standard of rice	<ul style="list-style-type: none"> - Quality inspection services 	<ul style="list-style-type: none"> - Quality inspection apparatus

3) Scale of the market

Paddy collection and distribution through the existing marketing channels in each region are supposed to continue in parallel in the future. A market scale is examined and set up according to the quantity of surplus rice and the quantity handled by the existing rice mills in surrounding area as a base.

(4) Operating agency

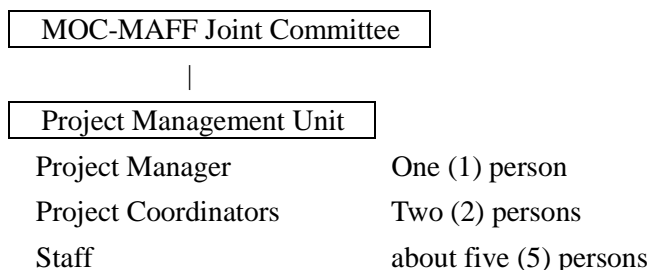
The one of the major difficulty of this project aside from the financial difficulty is that market-operating agency has to be newly established in the project. As for paddy market in Thailand, Bank for Agriculture and Agricultural Cooperatives (BAAC), the private enterprise and the agricultural cooperative are the operating agencies. The organization similar to BAAC does not exist in Cambodia. In case of the management of existing markets in Phnom Penh, the private sector is commissioned to management business, such as rental fee collection and garbage collection under the control of the municipal office and the market office of each market. Moreover, in the western part of Phnom Penh, as the first case in Cambodia, the housing development project that includes market facility by the private enterprise is going on. However, in the present time and in the near future, it is hard to expect the existence of any private enterprise that can perform market operation in the remote areas. In view of the present situation of farmer's organization in Cambodia, agricultural cooperative cannot consider as the candidate for an operating agency.

At present, (1) establish a new Public Enterprise, (2) establish a new section in GTC, (3) consignment to private sector/NGO are assumed as an operating agency. In any case, provision of training and technical assistance is indispensable.

(5) Implementation agency

1) Implementation agency of the project

The project will be implemented by both MOC and MAFF, and MOC shall be in a leading position. Implementation organization is assumed as follows.



Since the capability of government staff is insufficient, technical assistance for F/S and implementation of the pilot project shall be indispensable. On-the-job short-term training at paddy market in Thailand (1 to 2 person(s) × 2 months) shall be planned.

2) Supervision body for market operation

Market administration is under jurisdiction of the provincial government. Presently, there are no department/agency, which take charge of market administration, exist in the central government level. Based on this, supervising body for market operation shall be formed in the provincial level to which a market belongs. As for the central level, MOC and MAFF shall form a steering committee.

6.2.3 Feasibility Study

(1) Contents of the Study

1) Study area

Rice surplus provinces in study area of the Master Plan Study and Banteay Mean Chey province

2) Study items

- Preliminary examination of the validity of a paddy market with a test case
- Determination of operating agency, and planning of personnel training program
- Planning of overall program of the open paddy market establishment
- Planning of pilot project with model paddy market

(2) Important points of the Study

1) Planning of personnel training program for the operating agency

As mentioned above, major difficulty of this project is that market-operating agency have to be newly established in the project. Although several forms of operating agency are assumed, in any case, provision of training and technical assistance is indispensable. The contents of the personnel training program is assumed to include following contents in each stage.

Before starting operation (preparation stage)

- On-the-job training for management staff at paddy market in Thailand:
2 persons × 1 year (in the case of personnel experienced in management : about six months)
- Preparation of operating manuals
- Staff training according to the operating manuals
- Training of operation and maintenance for facility/equipment

After starting operation

- On-the-job training/Management instruction by the specialist : 2 persons × 1 year

2) Suitable land for market

The important point in market formation is in the location. It is a pre-condition whether there is any land of a required size in a good location. MOC was in charge of rice circulation at the time of past central management economy and still has many warehouses at the important positions in the rice marketing in each province, and effective use of those warehouses shall be examined.

3) System of pricing

There are two ways of pricing: negotiation or bidding. Although a bidding system is desirable, the realistic system in accordance with the capability of operating agency and social conditions shall be examined.

4) Scale of market

In each region, paddy collection with the existing marketing channels is supposed to remain in parallel in the future. A market scale is examined and set up, based on the quantity of surplus rice and the quantity handled by the existing rice mills in surrounding area.

5) Examination of the validity of a paddy market

Collect the necessary information for examining the possible/effective methods of realizing the required/planned functions, of realizing benefits for market user's, of establishing the operating agency, etc. in the study.

Detailed analysis on the cases of success and failure of paddy markets in Thailand and a test running of paddy market in very limited scale / functions are considered as effective method of the

study. Bat Dambang province, where conditions for market formation are best ready at present time, is presumed as a site for running the test.

6) Study in Thailand

It is considered that application of on-the-job training at paddy market in Thailand and/or utilization of Thai specialist as the instructor/trainer are effective for human resource development in the pilot project. Therefore, in addition to the detailed analysis of paddy markets in Thailand as mentioned above, it will be necessary to create the cooperative relations with the Thai authorities such as Ministry of Trade, Public Warehouse Organization (PWO), etc.

7) Function of seed cleaning and distribution at paddy market

It is considered that better quality seed than the one being used by most farmers can be obtained by cleaning the paddy brought to the paddy market. Exchanging this cleaned seed with ordinary paddy in the paddy market shall easily attain wide range distribution of better quality seed. Although this function is completely different from ordinary activities/functions of the market, feasibility shall be examined.

8) Provision of micro-credit service at paddy market

Credit/Banking services are provided at the paddy markets in Thailand because the BAAC is one of the operating agencies. In Cambodia, banking services in the provinces are underdeveloped and the micro-credits are mostly provided by NGOs. In this study, examine the possibility and practical ways in which NGO, such as ACLEDA, can provide the micro-credit services to farmers / paddy traders in the paddy market.

(3) Assumed formation of the Study team

The experts in following eight (8) fields are assumed members of a study team.

1. Team Leader
2. Market Facility / Infrastructure
3. Marketing system
4. Market Management
5. Post-harvest practices
6. Organization Analysis / Strengthening
7. Environment Assessment
8. Cost Estimation / Project Evaluation

6.2.4 Pilot Project

At present, Bat Dambang province is cited as a first proposed site for the pilot project because the conditions of market formation are most ready and the highest effect of open index price in the

marketing system is expected. Takeav province or Prey Veang province is the next proposed site, they are the major production areas in southern part of the country and active paddy trade with Vietnam is performed. As the market facility for border paddy trade, Prey Veang province is considered as better suited for market formation due to its location and better access by waterway from Vietnam.

It is required to select the best location by examining the various factors such as availability of appropriate land, road/waterway access to the market, opposition from the existing marketing agencies in the area and effect as a model.

6.2.5 Input and Output

Input	Output
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Phase 1: Feasibility Study	
<ul style="list-style-type: none"> Study cost - Study Team : 60 M/M (8 experts) - Presumption : 1,870,000 US\$ - C / P cost 	<ul style="list-style-type: none"> Plan for overall program of the open paddy market establishment Plan for pilot project
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Phase 2: Pilot Project	
<ul style="list-style-type: none"> Basic Design Study - Study Team : 25 M/M (5 experts) - Presumption : 600,000 US\$ - C / P cost <p>Project Cost : determined in the F/S (include costs for technical cooperation on establishment / personnel training of the operating agency, operation of pilot market and evaluation missions of the pilot project)</p>	<ul style="list-style-type: none"> Basic/detail design for paddy market pilot project Organization of operating agency Trained persons in operating agency Operation manuals for paddy market Evaluation result of the pilot project Amended plan for overall program of the open paddy market establishment
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Phase 3: Extension of the open paddy market system	
<ul style="list-style-type: none"> Establishment of markets facility / equipment Establishment of operating agency and personnel training of the operating agency <p>(input costs will the determined in the F/S and evaluation result of the pilot project)</p>	<ul style="list-style-type: none"> Through establishment of paddy markets at major rice production areas, achieve; Formation of Open Index Price, Strengthen of Market Information Service, Widen the Outlets of Farmer and Paddy Trader, Improvement of Quality Control of Paddy and Introduction of Rice Standard in paddy trading.
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6.2.6 Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
Phase 1: Feasibility Study	█									
Phase 2: Pilot project			█							
Design of facility/equipment for pilot paddy market			█							
Establishment of operating agency & Training of the operating agency				█						
Procurement of facility/equipment for pilot				█						
Operation of pilot paddy market					█					
Evaluation of the pilot project, and feedback						█	█			
Phase 3: Extension of the open paddy market system							█			
Short-term O.J.Training at paddy market in Thailand for staff of implementation agency		█								

6.2.7 Pre-condition, External condition and Risk

Pre-conditions and External conditions

- Land at appropriate location is secured.
- Responsible ministry is designated definitely.
- Incentive to government staff in implementation agency is maintained.
- Quality standard is available for use.
- Administration procedures, such as law enactment, proceed without delay.
- Sufficient talented persons are recruited for market operating agency.
- Sufficient budget is allocated to the project activities.

Risks

- Opposition from the existing marketing agencies such as paddy trader/collector.
- Market operating agency must newly be formed.
- Possibility of unlawful behavior on money management

6.2.8 Recommendation

Clarification of responsible ministry

Clarification of responsible ministry is one of the absolute pre-conditions of the project. As the result of the Study, it is not recommended that both MOC and MAFF participate in this project on a

same level.

Practical use of the existing warehouses

It is necessary to keep in mind that the practical use of the existing warehouses under MOC management is proposed also in "Project on Increase of National Rice Reservation (Project No.15)" in this master plan. The use of warehouse in paddy market is for short-term temporary storage.

Necessity for technical assistance

Due to insufficient capability of the government staff, technical assistance for F/S and implementation of the pilot project shall be indispensable. The contents of technical assistance considered necessary are described in the following list.

Project Stages	Contents of Technical Assistance
Feasibility Study	Dispatch of study team
Pilot Project	
- Design study of facility/ equipment for model paddy market	Dispatch of study team
- Establishment of operating agency for model paddy market	Assistance on the formation/strengthening of operating agency, preparation of operating manuals and etc. by short-term expert/consultant
- Operation of model paddy market	Assistance on the operation of paddy market and personnel training of the operating agency by long-term experts group (include expert from Thailand)
- Evaluation of the pilot project	Dispatch of evaluation mission

6.3 Master Plan Study on Establishment of Agricultural Cooperatives (Project No.6)

Development Target : 2. Reasonable price mechanism under modern business system

6.3.1 Purpose and Background/Rationale

In order to strengthen farmers' capability in marketing, it is usually advisable for them to organize a cooperative or an organization for group sales/purchase. But in Cambodia, farmers' ties are generally weak and such organizations are not popular due mainly to the past unsuccessful attempts by the governments to organize farmers into communal farms or cooperatives. Promoting marketing coops nationwide may be too hasty a measure under the present circumstances.

On the other hands, various farmer organizations such as Water User Associations, Village banks, Paddy/Rice banks, farmer groups for group purchase of inputs etc. are being established by mainly NGOs. However, these organizations are still weak and lack in experiences and skilled manpower. The study includes a general and an intensive surveys on existing FOs to determine the current situation and also to find out the real needs and problems in the selected well performing FOs. The intensive one is also to enlist the best candidates for formulating the Pilot coops.

Rural area is poor and the gap between the urban and rural area is widening. This is why the support and promotion of agricultural coops is sought after as important measures to secure income for farmers and upgrade their welfare. This master plan study seeks to formulate the short and medium term plans to organize various kinds of agricultural coops according to the conditions and needs of the communities and provides support services to them.

Establishing proper legal frameworks for coops as well as the government support system are also essential to develop coops. While the draft Royal Decree for agricultural coops is being prepared by MAFF, there is no independent department/office to be in charge of coops in MAFF. The study proposes to help establish an office for coop affairs in DAE, MAFF as well as in DAFF in each province and to equip all those offices with necessary means and provide appropriate technical training for all the staffs in the offices. The study proposes the training systems for the government staffs and farmers, and makes estimations of necessary facilities, equipments and material for this activity. The staff training is the precondition for successful farmer training that should be immediately following, as inexperience and the shortage of government's capability in this field seems critical at this moment.

6.3.2 Basic Concept

(1) Scope and direction of the Study

1) Functions of the coops

The functions to be studied are:

Joint Sales/Purchase, Mechanization, Processing, Seed multiplication, Animal husbandry, Fish culture, Saving and Credit, Water Use, Market Information/PR, Technical Extension, and so on.

2) Conditions of the communities

The Study makes qualitative and quantitative analysis of the communities and the farmer's activities in order to find out the most appropriate functions and types of the coops to be introduced.

3) Size of the coops

The Study looks into the optimum sizes of the coops based on the scale economy and difference in conditions of the communities.

4) The Products/Crops of the coops

The Products/Crops dealt in the Study include not only Rice but also Vegetable/Fruits, Livestock, Fish and other agricultural products. The Study determines the kinds of activities that suit to an organization better than to individual farmers.

5) Roles of the Government

Organizational changes are proposed to set up offices/posts dedicated to coop affairs and provide useful services about marketing, technical extension, managerial/skill training, networking with other coops and administrative or development agencies, etc.

6) Institutions and policies

The appropriate policy measures and legal systems are proposed to promote coop movement. Among them, the enactment of a coop law and related laws that legalizes a coop and support its activities, implementing efficient policy measures for farmer training, mobilizing fund for coops, and so on, are considered very important. However, prior to the formulation of concrete policy measures, rural surveys are conducted to assess the needs and situation.

(2) Study area

1) Surplus Regions

Northwest provinces and main agricultural areas along the Tonle Sap, Basac and Mekong (Bat Dambang, Banteay Mean Chey, Kompong Cham, Prey Veang, Takaev, etc.)

- 2) Subsistent farming Regions
Provinces of Kompong Speu, Svay Rieng, Kandal, etc.

(3) Beneficiaries

- 1) Primary beneficiaries: The farmers who are organized
- 2) Indirect beneficiaries: General consumers

6.3.3 Study Plan

(1) Contents of the Study

- 1) Survey on existing farmer organization

In order to assess the actual situation about Farmer Organization (FO) s and farmers' views on them, the Study conducts a national survey on them.

People's attitudes towards a coop are complicated as they had bitter experiences during the long civil wars, while some traditional community organizations or the ones newly established by the initiatives of NGOs are functioning well when they serve their needs through right approaches. This survey will result in the first statistics about FOs revealing the actual picture in Cambodia, help analyze the factors leading to success and failure in organizing farmers and formulate appropriate plans develop coops in Cambodia.

- 2) Categorization of rural communities

In order to determine the most appropriate types and activities of coops for each community, the Study classifies the communities according to the characteristics of the areas, size, the main products, etc.

- 3) Establishment of pilot coops

It formulates "Pilot-Coop Program" to provide various support services to some selected FOs on the basis of performance to help them form Pilot Coops, kind of "show windows". The successful models are very useful for the farmers to gain confidences and essential for the staff of the supporting agencies to have much needed practical experiences while performing their duties.

- 4) Support system

As supporting systems play key initial roles in promoting coop movement, it is urgently needed for both sides of donors and Cambodia to set up a joint operation to work out such systems. The study formulates TOR for advisors to promote such initiatives, of which the priority are given to:

- Enactment of necessary laws/by-laws

- To propose appropriate institutions/systems to set up
- To formulate a plan for Coop Extension at Local level.

5) C/P training

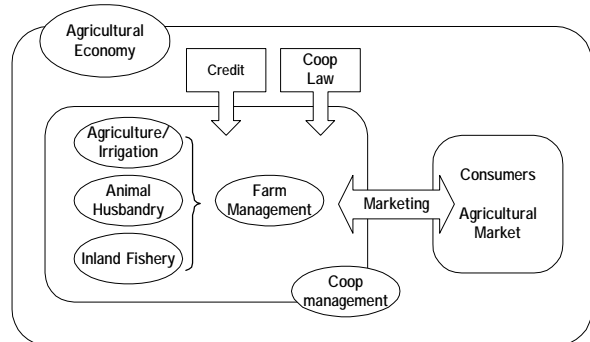
It proposes the plans to send Cambodian C/Ps for training abroad.

(2) Formation of the Study Team

1) Advisors (development consultants)

The areas of expertise :

- Agricultural Economy/Coop management
- Coop Law
- Credit
- Farm Management
- Marketing
- Agriculture/Irrigation



2) C/P

- Ministry : Ministry of Agriculture, Forestry and Fishery
- Department : DAE

(3) Required input

Manpower

Advisers : 50 M/M

C/Ps : 100 M/M

Equipment

Audio-Visual equipment, Computers, Vehicles, etc.

Others which are necessary for seminars/training

Estimated total cost

US\$ 1,200,000 (including overseas training of C/Ps)

6.3.4 Implementation Schedule

Duration of the study is 1.5 year as a whole. The advisors' individual schedules in Cambodia are shown in the table below, while the training by Cambodian Government continues.

Implementation Schedule

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	Survey	Planning/Legalization							PilotCoop						Monitor/Training				
Agricultural Economy/ Coop management	████████████████████																████████	████████	
Coop Law	████████████████████																████████	████████	
Credit	████████████████████																████████	████████	
Farm Management	████████████████████																████████	████████	
Marketing		████████████████████															████████	████████	
Agriculture/ Irrigation					████████████████												████████	████████	

The whole span of the study is divided by 6 stages such as followings:

Stage 1: General Survey (Assessment of the current situation, Formulation of FO list)

The first stage of the Study is dedicated to grasp the real situation in the areas concerned. While the team formulate FO lists for each of 10~12 Provinces, each consultant examines and analyzes the situation at each sector/field.

Stage 2: Intensive Survey/Farmer Training

Based on the data collected in Stage 1, 5~6 FOs per province (5~ 6 provinces nationwide) are selected and 10~20 members from each FO are targeted for intensive study to find out their needs and problems at their organizations. They are also given basic training for organization and management of cooperatives, together with Provincial DAE staffs. At the end of this stage, a few candidates for pilot coops are selected to set up on the basis of their track records and their responses to the training.

Stage 3: Formulation of Plans/Pilot coops and Establishment of Legal System

Based on the information studied at the stage1 and 2, Plans and Programs are formulated for the development of agricultural coops including establishment of two pilot coops within easy access from Phnom Penh. Consultants also prepare for their lectures about the plans/programs formulated and ideas behind them, meant for the circuit seminars planned at the following stage. The consultants of Coop Management, Farm Management and Marketing set up whole seminar programs and produce the training material with the help of C/Ps. The consultants of Coop Laws and Credit advise each concerned government department based on the findings of the Study at this stage.

Stage 4: Establishment of Pilot Coops/Circuit Seminars

Circuit Seminars are held at 2 selected venues in the study areas where the pilot coops are to be established. The consultants give lectures and hold workshops using audio-visual equipment and printed training material according to the seminar programs prepared in advance. The contents are:

Basic theory of Coops
Organization Management
Coop Laws
Rural Credit
Farm Management , etc

C/Ps are also shown the way to conduct this kind of seminars for them to be able to conduct similar ones eventually by themselves. At the end of the training, Coops are established with some additional technical and financial assistances and DAE start regular monitoring together with advisory services.

Stage 5: C/P Training

According to the training plan previously set, C/Ps are sent out for the training abroad. The destinations are either Thailand or Japan.

Stage 6: Evaluation / Training and formulation of the final National Coop Development Plan

In the second year, the team visits the pilot coops to evaluate the development, to advise both farmers and the staff of the supporting agencies to help solve the problems, and also to provide additional training to overcome either organizational or technical problems for their coops and/or for their agriculture.

6.3.5 C/P Training

(1) Seminar on Coop. management

The consultants conduct a seminar on “Coop Management and Organization Management ” for the staffs of DAE, MAFF and DAFF, and selected candidates of coop manager.

(2) Training in the Third country

Selected staff of DAE, MAFF are sent to Thailand (Agricultural Universities, Ministry of Agriculture and Cooperatives) to learn about the systems and measures to support Coops.

(3) Training in Japan

Selected staffs of MAFF are sent to JICA group training on Coops.

6.3.6 Remarks

The Study intends not only to formulate plans and programs to promote and support coops but also

proposes and advises C/Ps and concerned government departments to establish legal systems for the same objective, and conducts seminars in Provinces to promote the ideas of coops and help establish coops out of the selected FOs. Monitoring the pilot coops provides important insights for the planners and the farmers can learn a lot through study tours to such models.

Regarding the fields of Coop Laws and Rural Credit, C/Ps are invited to work together to formulate appropriate plans to submit to the cabinet/parliament. Main tasks of the consultants on these fields are therefore done through joint operation with the particular government offices in charge.

The consultants of Agricultural Economy/Coop Management, in the latter period, mainly concerns about seminars and workshops. The programs are arranged to be attractive to ordinary farmers with many references to the local issues and concerns, and with the aids of audio-visual equipment.

6.4 Project on Establishment of Rice Quality and Inspection Standard (Project No. 13)

Development Targets: 2. Reasonable price mechanism under modern business system
3. Improvement of post-harvest quality control of rice

6.4.1 Purpose and Background/Rationale

(1) Background and rationale

Currently, commercial transaction of each dealer is individually practiced in a closed atmosphere. In order to establish fair and quick transactions in the market economy, there needs to be sufficient information available both to sellers and buyers. It is difficult to make a deal with common cognition of the expected quality when the quality fluctuates at each purchase. The produce is of varying quality because producers themselves have no means of measure quality. On the other hand, there are no activities to improve the quality, citing the inferior quality of material (paddy). In short, they are summarized as follows:

- 1) General transactions are conducted according to samples or actual commodity. They are inefficient and various quality levels can not be identified to the buyer. Often the buyer is forced to take the risks. Consequently, prices are unified at the price of the lowest grade rice, reducing the opportunities for quality improvement. Furthermore, it will not lead to the increase of the farmers' income.
- 2) In the price formation system and in the domestic procurement of rice, specifications on the quality are vague which leads to an ambiguous system of transactions.
- 3) Because there is no quality standards, it is unable to produce a large quantity with uniform quality.
- 4) There is no quality standard on the degree of milling.
- 5) It is difficult to improve and to ensure uniform quality produce; consequently it is difficult to obtain buyers' trust. The situation where producers seek buyers rarely occurs.
- 6) The government inspection agencies are not equipped with the necessary equipment and are unable to carry out reliable inspections.
- 7) Even if there are quality standards, rice millers, wholesalers and trading companies have no means of their self-imposed inspections nor do they have.

With the enactment of the rice quality standards, price (index price) information according to the quality/ grade (variety, production area) shall be utilized, which will enable efficient and fair transactions. By clarifying the quality and variety of the rice corresponding to the price, will minimize the ambiguous pricing difference and improve the reliability on the variety and quality.

At the same time, the standardization of the inspection method, those concerned in rice industry

shall be able to employ the same or similar method. Ultimately, it shall be possible to extend the inspection methodology so that the standards users can conduct their own self-imposed inspections based on the created quality standards.

(2) Purpose

Prepare the quality standards and inspection standards and realize the following items:

- 1) Introduction of the quality control system
- 2) Improvement of the quality control (inspection) techniques
- 3) Improvement of paddy and milled rice quality (uniform quality produce)
- 4) Open price index - Publicize the prices based on each quality

6.4.2 Basic Concept of Quality Standards and Procedure for its Introduction

(1) Basic concept

Although there are many rules, regulations, and laws, people are generally unwilling to observe or obey them. Accordingly, enforcement agencies are ineffectual in enforcing compliance with said rules, regulation and laws. Consequently, people ignore the regulations and the system that should be mutually observed to maintain and improve the healthy ordered society. Part of the blame lies in the fact that there are Socio-cultural attitudes, values, and behaviors are difficult to control, to alter, and to modify through an unenforced/ optional regulatory framework (without incentive(s)). These national conditions (perceived lawlessness) create a poor business climate, which negatively affects commercial transaction on the whole. This situation leads to a disincentive for direct investment, perhaps explaining the low levels of it in Cambodia.

Would the quality standards enacted to control the rice quality according to the quality standards in Thailand and Vietnam be effective in Cambodia? Would the routine work be carried out according to the inspection standards? These are the problems to overcome. The way with incentive must be provided for farmers, rice millers, and rice traders only to maintain the quality standards. But if there were too many complicated restrictions, conditions or regulations, the problem would become more difficult to solve. In introducing the quality standards and inspection standards, there are some prerequisites

As an instrument, the quality standards are indispensable as a common language to establish mutual understanding. A flow chart showing activities from present to reaching development targets in this project is in the following figure.

Users and beneficiaries of Quality Standards in the marketing system

Farmers

Material/paddy

Poor quality of paddy/
stunted growth emerging/
immature/ cracked grain, etc.

Uneven quality inviting low
price/ random variety and
quality under one price (no
need of improving quality)

Trader and rice millers

Material/paddy and milled rice

Low grade milled rice: contain a lot of
broken rice and immature rice

Rice quality and inefficient & unfair
transactions: No improvement of uneven
quality makes it difficult to find new
customers and maintain customers' trust.

Marketing support system Government of Cambodia

Act as a pioneer for enacting
quality standards and improv-
ing quality control system take

Since there is no strategy to improve,
ignore credit in transactions

Mutual
distrust

Non-productive

circulation

Government policies are not wide
scale measures leading to
improvement : Government
decreasing management functions.

Delay in development.
Hampers development

Enactment of Quality Standard

Demand based
on the standards/
feed back of
market
information

Simultaneous
support to farmers

*Understanding quality
*Grasp own ability
*Set improvement target
*Prepare detailed specifications and
appropriate samples and conduct transaction
by quality specifications
*Prepare general idea of quality
improvement

Guidance
& PR

Composition of detailed and special
specifications

Enactment and introduction of
Quality Standard, Inspection
Standard and relative laws/ Extension
activities

Execute improvement of quality
control

Fair and sound execution: Effective recirculation

Improvement of cleaning/
drying/ selecting.
Together with the
improvement of seed
quality

Improvement of paddy
quality (uniform quality)

Exchange
of information

-Deliberate rice quality and other cost /
performance
-Be able to produce qualities
according to the specifications
-Execute price formation (publicize)
based on qualities in the market where
fair transactions are possible.

Monitoring

Improved
mutual trust

Analysis of results of monitoring and chalk out rehabilitation plan

With the increase of national
wealth, consider the distribution of
wealth.

Set up a market place(s) where quality is
evaluated and defined.

Varieties and quality are the factors for
price formation.

Optimization of information
maximizes market allocation
functions.

Reformation of policies to suite the
situations (plan for increasing people's
income [bottom up plan])

Participation by new buyers

Result of improving post-harvest quality control of rice

**Together with the result of ever-lasting food security strategy, and
achievement of economic development through Sound marketing system**

Other results
of activities
*1 See figure in
Appendix B

Flow Chart of achievement of introducing quality standard and inspection standard

The fundamental conditions are as follows:

- 1) It shall be used throughout the country except in the case of export and conditions set forth by the buyer. The transactions under an additional condition set forth by the buyer or seller or under conditions amended by enlarged interpretations either by buyer or seller shall not be regarded as the transaction under the quality standards.
- 2) The quality standards must be applied for government procurements and local procurements through foreign assistance including the ones for reserve. The above mentioned rice is presently regarded as at least 20% of the commercially marketed portion of the domestic rice consumption. And the government should take initiative in applying the quality standards in these transactions.
- 3) The rice price is corresponding with those of the international price. Although the prices are generally lowering, the prices for each variety and grade shall be investigated and recorded constantly in order to confirm the achievements of the quality standards. The dealers will be obligated to display the quality and variety on the bags or at their shops. In this case, several shops (companies) shall be designated as monitors and announce the prices promote the transactions by open price according to the quality standards.

(2) Procedure for enactment/ introduction and some noteworthy points

Regarding the quality standards, some standards (as a draft) are necessary as an outline during the preliminary discussions. For the development of an effective quality standards, from the Study, technology transfer, during the phase II, the necessary and expected effect of the quality standards should be explained to related parties (government officials, rice millers, etc.) and the degree of their understanding. Their requirements should be confirmed and discussed fully in order to make a more accurate quality standards. (Taking into consideration of the present conditions of rice quality specially of low grade rice)

Required conditions for the original draft of the quality standards

(including some contents to introduce as an example)

- 1) Description of purpose and basic conditions
 - Targets for quality improvement
 - Maintain confidence in transactions (set the prices according to each quality and supply rice of the export specifications).
 - Improvement of marketing efficiency.
 - Universal, immutable and nationwide application that does not allow the value to drop lower quality than those specified in the quality standards.

- 2) Set the definition clearly on quality and variety
- 3) Cite the object varieties and justify them.
- 4) The grade should cover a full range of quality including the highest quality rice to low quality rice. There should be a specific and descriptive justification for low quality rice.
- 5) Classify the present quality as a prefatory procedure for making the quality standards.
- 6) Make a schedule from preparation to enactment and introduction.
- 7) How to understand the quality standards and its role

To establish quality, the broken rice and other physical factors should be examined mainly. However, at the preparatory stage, the present rice quality in the market need to be confirmed by sensual taste tests which clarifying the relation between the quantitative data and qualitative data, with respect to the uneven quality and low-grade rice. At the final point of the preparatory stage of enactment, meetings will be held with officials concerned in MOC, MOFF, Camcontrol, rice millers, and rice trading companies in order to minimize revisions after enactment. Four to five months are scheduled for the preparation and enactment work. Together with the clerical procedures for enactment, approximately eight months should be scheduled.

At the end of the introduction/ preparation stage, seminars and short course of study will be conducted for the officials of: MOC, MAFF, Camcontrol, representatives from rice millers and rice trading companies, and administrative staff members of the local governments. The aim of seminars and courses is to smooth the dissemination of the quality standards and to deepen understanding of the techniques of the inspection methodologies. Simultaneously, the mass media will be utilized to help to clarify and to promote the government project. A further five months should be taken for these public relation activities.

The last stage of this project encompasses monitoring and extension activities. During this stage, it will be assessed how quality the improved qualitative factors have impacted prices and the consumers' reaction to such change. At this point, the price elasticity can be assessed with respect to differing qualities of rice and consumers' sensual taste preferences regarding the differing varieties of rice available. After analysis of the data, complete revisions and modifications can be made and can be applied accordingly. One to one and half years will be necessary for this stage.

Setting of Part I and Part II in the Project

The project shall be divided into two parts; Part I which covers the software portion of creating the system, and Part II which covers the hardware portion of assisting with equipment and material. The time and cost for the hardware portion should be made flexible:

1) Part I

Mainly the assistance in enactment/introduction/extension (including monitoring) of the quality standards. Its contents are submitting the quality standards (draft), holding discussions,

meetings, etc. Promote the enactment and introduction quickly and smoothly including pre-requisites. Afterwards, conduct monitoring and revise the contents of standards enacted if need be, and importantly, start extension and improvement works accordingly.

2) Part II

Analyze necessary data from all the parties concerned in rice marketing, collect, and study any lacking information in time for enactment of the standards. Discuss and plan the proposed satellite locations, including their necessary equipment, remodeling of existing facilities, etc. Detailed studies shall be conducted at the middle of enacting stage; Part I, the design and supervision of construction/ installation work, must be completed before extension work (monitoring) can start. Along with the progress of Part I, pertinent planning of equipment and facilities and their efficient utilization shall be carried out. The implementation period of Part II is estimated to be about ten months.

6.4.3 Contents of the Project

(1) Project area

The Official quality standards shall be legislated and apply to the whole of Cambodia. (Inspection function shall be established at several important areas to improve the rice marketing including Phnom Penh.)

(2) Beneficiaries

- 1) Farmers, rice millers, trading companies, wholesalers and retailers who directly deal in rice (paddy, brown rice and milled rice)
- 2) Indirectly, consumers. As quality control progresses, people's confidence in the entire rice marketing industry shall increase and the entire population of Cambodia shall indirectly be beneficiaries.

(3) Implementing agency

Camcontrol and MOC/MAFF

(4) Main activities

- 1) Guidance in enactment/ introduction/ extension of quality standards and inspection standards of rice.
- 2) Installation of necessary inspection equipment and remodeling of facilities.
- 3) Cooperation with other projects' program

- 4) Planning and execution of manpower fostering program for the executing organization.
- 5) Guidance in price researching methodologies based on the quality (to be a part of monitoring).
- 6) On-the-job training

(5) Outline of required input

- 1) Part I: Guidance in enactment and extension of quality standards
 - a) Guiding staff : 3 persons for 40 man-months
 - Details 1 person for one year and one month
 - 1 person for one year and five months
 - 1 person for ten months
 - (Periodical assignment in each specialized subject)
 - b) Equipment : 1 lot of inspection equipment. Minimum requirement for introducing enactment of quality standards.
 - c) Total Estimation : US\$1,200,000

- 2) Part II: Detailed study, design and execution of equipment installation concerning the execution of quality standards and inspection standards
 - a) Experts : 9 man-months (4 different fields)
 - b) Equipment : 1 lot of inspection equipment, remodeling of existing building.
 - c) Total Estimation : US\$1,200,000

(6) Expected output

Planned output shall be as follows:

The effect of the project shall be enlarged by treating a part of the prerequisites as achievement of the project and shorten the time of extension period to the minimum.

<u>Output</u>	<u>Division</u>
1) Enactment/introduction of quality standards:	Part I
2) Installation of inspection equipment:	Part II
3) Decision of inspection method:	Part I
4) Display and announcement of prices based on quality:	Part I, Part II
5) System of domestic procurement of rice for support and for government distribution:	Part I, Part II

(7) Implementation schedule

Period for enactment, introduction and extension/training of quality standards: 2.5 years

Detailed design study: 8 months (at the same time of enactment of the standards)

Execution: 4 months

Estimated schedule for the project is shown in the below.

Implementation schedule of the Project

Year	1												2												3												
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6							
Part I																																					
Main activity	Enactment Introduction/												Extension preparation												Extension/ monitoring												
Quality approval (system)	5										3									5			13.0														
Quality approval (physical property/ inspection standard)	9												6								2		17.0														
Marketing/ monitoring							6												4				10.0														
Total man-months																																					40.0
Part II																																					
Main activity	Preparation Study												Installation Detailed Design												supervision Completion approval												
Equipment/ quality	■			■			■			■			■			■			■			■			■			■			■			2.2			
Equipment/ inspection	■			■			■			■			■			■			■			■			■			■			■			■			4.5
Building facility/ Procurement/	■			■			■			■			■			■			■			■			■			■			■			■			2.3
Total man-months																																					9.0

(8) Personnel plan

1) Part I: Personnel plan for enactment/introduction/extension (including monitoring)

Designate consultants from following three fields.

- a) Quality inspection (System)
- b) Quality inspection (Physical properties/ inspection standards)
- c) Marketing/ monitoring

2) Part II: Detailed study, detailed design, supervision of installation

Designate consultants from following four fields:

- a) Equipment plan I (Quality standards)
- b) Equipment plan II (Inspection)
- c) Building/ building equipment
- d) Procurement/ estimation

6.4.4 Pre-condition, External condition and Risk

(1) Pre-conditions and External conditions

- 1) Smooth administrative procedure such as enactment of laws, etc.
- 2) Cooperation from rice millers and rice dealers
- 3) Cooperation from mass-media

(2) Risks

- 1) Opposition from parties who are getting profit from transactions not controlled by public organizations in the general market or in the marketing of support rice and rice of government distribution.
- 2) In case buyer does not demand application of the quality standards, seller tends to lower the quality reactively.

6.4.5 Remarks

The project pertaining to the quality standards may be applied/used for other projects. Therefore, bear in mind that this project must be executed ahead of any other projects. (Part II should be started at the same times Part I and completed during the introduction stage of Part I and hopefully before the monitoring stage of Part I.)

6.5 Project on Improvement of Rice and Paddy Trade System (Project No.14)

- Development Target:
1. Stable and balanced regional supply-demand
 2. Reasonable price mechanism under modern business system
 4. Development of rice borer trade

6.5.1 Background and Rationale

The economic base of Cambodia relies on the agricultural sector (about 40% of GDP and 80% of labor absorption), especially rice as staple food of Cambodian people. Owing to favorable natural conditions as topography, rainfall and water resource, paddy production has been, historically, maintained according to agro-ecological systems. Because of prolonged civil war, while Cambodia exported several hundred thousand tons of rice in the past, total paddy production decreased considerably, and it can not meet with the domestic demand of rice. After 1993 when the political stability was secured, paddy production recovered sharply, and since 1995, domestic production of paddy could meet with the internal demand, and reached to the level having a certain surplus. Due to the small-sized domestic market as well as poor transportation infrastructure within the country, considerable amount of not rice but paddy is flowing cross-borders, to Vietnam and Thailand. In other words, Cambodian farmers are securing their income by depending on the neighbor countries. Therefore, determination of paddy selling price by Cambodian farmers is dominated by traders from Vietnam and Thailand. In addition, these trade transaction is being carried out unofficially, resulted in: (a) it is impossible to precisely grasp the quantity of paddy flown cross-borders; (b) there exist several systems in which Cambodian traders and transporters should pay fee as a kind of custom duty. The fee collected illegally is not flowing to the national revenue; and (c) Cambodia itself is losing value-added through the said trade transaction.

On the other hand, in view of Cambodia's participation to ASEAN, it is urgent matter that Cambodia shall take prompt action to establish its basic policy for the domestic rice industry to encounter the effect of AFTA. Especially, it is quite important issue how to establish good relation with neighbor countries, Thailand and Vietnam, which are the first and the second largest rice exporting country.

6.5.2 Purpose

It is evident that the government policy enacted during the time when Cambodia was facing deficit in domestic supply of food (rice), which prohibits exporting paddy, is no longer appropriate due to the fact that the domestic production of paddy has been exceeding the domestic demand. In addition, several contradictions have brought about in the paddy/rice business with a negative impact caused by progress of market-base economic movement as Cambodia's basic economic policy. Under such circumstances, paddy cross-border trade shall be institutionalized and

systematized, and the domestic and regional trading system for paddy/rice shall be rationalized and establishment of institutional framework and system for paddy/rice business based on a market mechanism shall be promoted. The major and concrete aims are:

- (1) Increase in domestic value-added of paddy/rice as well as income of paddy/rice traders including farmers.
- (2) Elimination of illegal fee collection in the paddy trade and transportation network.
- (3) Keeping record on paddy/rice trade including cross-border, which shall provide necessary information to prepare a food balance sheet and further to establish national-level agricultural policy.
- (4) Development and promotion of intra-regional paddy/rice trade in the Indo-China Region including Thailand and Vietnam, No. 1 and 2 rice export country, respectively.

6.5.3 Contents of the Project

(1) Project area

Since the project includes legislative aspects, the project area shall cover the entire Cambodia. However, more intensive survey and investigation will be required for the areas/provinces in which rice surplus could be produced as well as the heavy deficit areas/provinces from viewpoints of the paddy/rice trading.

(2) Beneficiary

Direct beneficiaries are traders, transporters and rice millers who are connecting with paddy/rice marketing, and consumers or Cambodian are indirect beneficiaries.

(3) Implementing agency

MOC and MAFF, with support of Ministry of Justice

(4) Main activities

- 1) Study on establishment of improved paddy trading system and enact the regulations
 - To identify and confirm the present conditions and issues on paddy trade in details, and to study thoroughly how to improve them.
 - To assist, support and facilitate necessary procedure to promulgate and enact the required regulations.
- 2) Conclude paddy/rice trading treaty with neighboring countries under the concept and the

framework of AFTA

- To support preparation of a basic agricultural policy
- To establish a food (rice) balance sheet and to propose upgrade its accuracy
- To confirm Cambodia's position in regional trading framework of paddy/rice.
- To prepare draft agreement on paddy/rice trade with neighboring country (Thailand and Vietnam) and to support negotiation activity

3) Study on improvement of paddy/rice trading system and establish the system

- Streamlining of procedures
- Elimination of illegal and unfair collection of fee
- Management of trading volume of paddy/rice including their demand/supply

(5) Required input (Refer to an attached Figure)

Manpower input:	Legalization expert (International)	12 M/M
	Legalization expert (Domestic)	24 M/M
	Trading System Expert (International)	6 M/M
	Trading System Expert (Regional-A)	6 M/M
	Trading System Expert (Regional-B)	6 M/M
	Trading System Expert (Domestic)	15 M/M
	Marketing System Expert (International)	6 M/M
	Marketing System Expert (Domestic)	15 M/M
	Statistic Planning Expert (International)	6 M/M
	Statistic Planning Expert (Domestic)	15 M/M
	Total	111 M/M

Cost incurred:	Remuneration	US\$1,065,000
	Travel expenses	230,000
	Equipment/machinery	195,000
	C/P expenses	56,000
	Total	US\$1,546,000

(6) Expected output

- Countermeasures for institutionalizing and systematizing paddy trade
- Paddy/rice trading treaty with ASEAN member countries
- Reporting and recording's system on export and import of paddy/rice and inspection system
- Statistics on paddy/rice trading

(7) Implementing schedule (Refer to an attached Figure)

It is estimated to require two (2) years for investigation and project planning.

6.5.4 Pre-condition, External condition and Risk

(1) Pre-conditions and External conditions

In order to smoothly implement the proposed project and to achieve the project objectives, the following measures shall be fully taken into consideration:

- (a) Recognition by Council of Ministers with highest priority
- (b) Opening study/work processes and keeping transparency
- (c) Prompt decision making by concerned ministries
- (d) Understanding of neighboring countries

(2) Risks

Against the implementation of the proposed project, the following risks are deemed to take place:

- (a) Resistance by groups with benefit from the illegal fee collection
- (b) Opposition movement by rice businessmen in neighboring countries
- (c) Opposition movement by rice growers and their pressure groups in neighboring countries

6.5.5 Remarks

For the implementation of the proposed project, it is prerequisite to obtain cooperation from the international and the regional support agencies.

Project on Improvement of Paddy/Rice Trading System - Implementing Schedule and Required Input

Implementing Schedule		1st Year	2nd Year		Remarks		
Survey Item							
1.1 Present Condition		█					
1.2 Situational Analysis		█					
1.3 Plan Formulation							
1.3.1 Legalization Component							
-Review of Existing Regulations		█					
-Method for Enforcement of Regulations		█					
-Examination & Approval by Ministries			█				
-Enforcement of Regulation			█				
1.3.2 Trade Treaty under AFTA							
-Prepare Draft Treaty		█					
-Negotiation with member country			█				
1.3.3 Trading System Improvement							
-Simplification of Procedure		█	█				
-Preparation of Statistics		█	█				
Required Input				M/M			
Exertise	Belong						
-Legalization	International	█	█	12			
-Legalization	Domestic	█		24	Remuneration	<u>Unit cost</u>	<u>Value</u>
-Trading System	International	█		6	-International (30)	\$20,000	600,000
-Trading System (A)	Regional	█		6	-Regional (12)	\$10,000	120,000
-Trading System (B)	Regional	█		6	-Domestic (69)	\$5,000	345,000
-Trading System	Domestic	█	█	15	Sub-total		1,065,000
-Marketing System	International	█		6	Traffic Expenses	L.S.	230,000
-Marketing System	Domestic	█	█	15	Equipment	L.S.	195,000
-Statistic Planning	International	█		6	C/P Expenses	L.S.	56,000
-Statistic Planning	Domestic	█	█	15	Total		1,546,000
				Total	111		

6.6 Project on Increase of National Rice Reserve (Project No.15)

Development Targets: 1. Stable and balanced regional supply-demand

6.6.1 Background and Rationale

A nation needs to maintain the food reserve, which should be enough to relieve the victims of disaster and the vulnerable people, and to dissolve the anxiety of people for food. The Cambodian government recognizes the necessity of the food reserve and 1,000 tons of paddy, although it is a small quantity, is reserved by GTC of the Ministry of Commerce under the scarce government budget. By joining ASEAN in April 1999, Cambodia is obliged to reserve 3,000 tons rice for the ASEAN Food Security Reserve and worked out a policy to reserve 5,000 tons of paddy equivalent to it. But, in the present situation, volume has not reached the level in the policy.

Rice, as staple food, has been lacking for many years with the damages by the civil war, drought and flood in Cambodia. Rice production has reached the level of self-sufficiency since 1995, but still many vulnerable people are facing the difficulty to have enough rice. WFP distributed 84,554 tons of rice to the vulnerable people during the 3 years from 1997 in the Food for Work program. It is about 28,000 tons annually. NCFDM distributed rice equivalent to one billion Riel for these 2 years to relieve the victims of disaster. It was 1,173 tons in 1999 and 1,272 tons in 2000. NGOs and IOs also distributed rice to the victims of disaster.

In the future, instead of WFP, the Cambodian government itself should bear the activity to relieve victims of disaster and the vulnerable people. Also, the government may be able to manage the balanced food demand-supply and the stable price by keeping food reserve and by discharging them to the markets occasionally. However, minimum level of food reserve is desired, because the food reserve has no profitability and a large quantity of reserve will compress the government budget.

6.6.2 Basic Concept

(1) Basic concept

- 1) Food reserve is for achieving stable and balanced supply-demand and price stabilization of rice.
- 2) Connect the food reserve and the food supply to the vulnerable people, both should be carried out by the government.
- 3) The form of reserve shall be paddy because it is suited for a long period of storing than rice. In general, the period of milled rice storing is limited for only one month.
- 4) The reserved paddy shall be processed to milled rice and they shall be distributed to the vulnerable people through NCFDM and/or WFP with free of charge.
- 5) At first, to generate a fund for the free of charge distribution, the government shall handle the

extra amount of paddy. And sell them after milling by the company under the government control and use the profit as a fund.

- 6) Quantity of food reserve shall be increased step-by-step.

(2) Reserve quantity

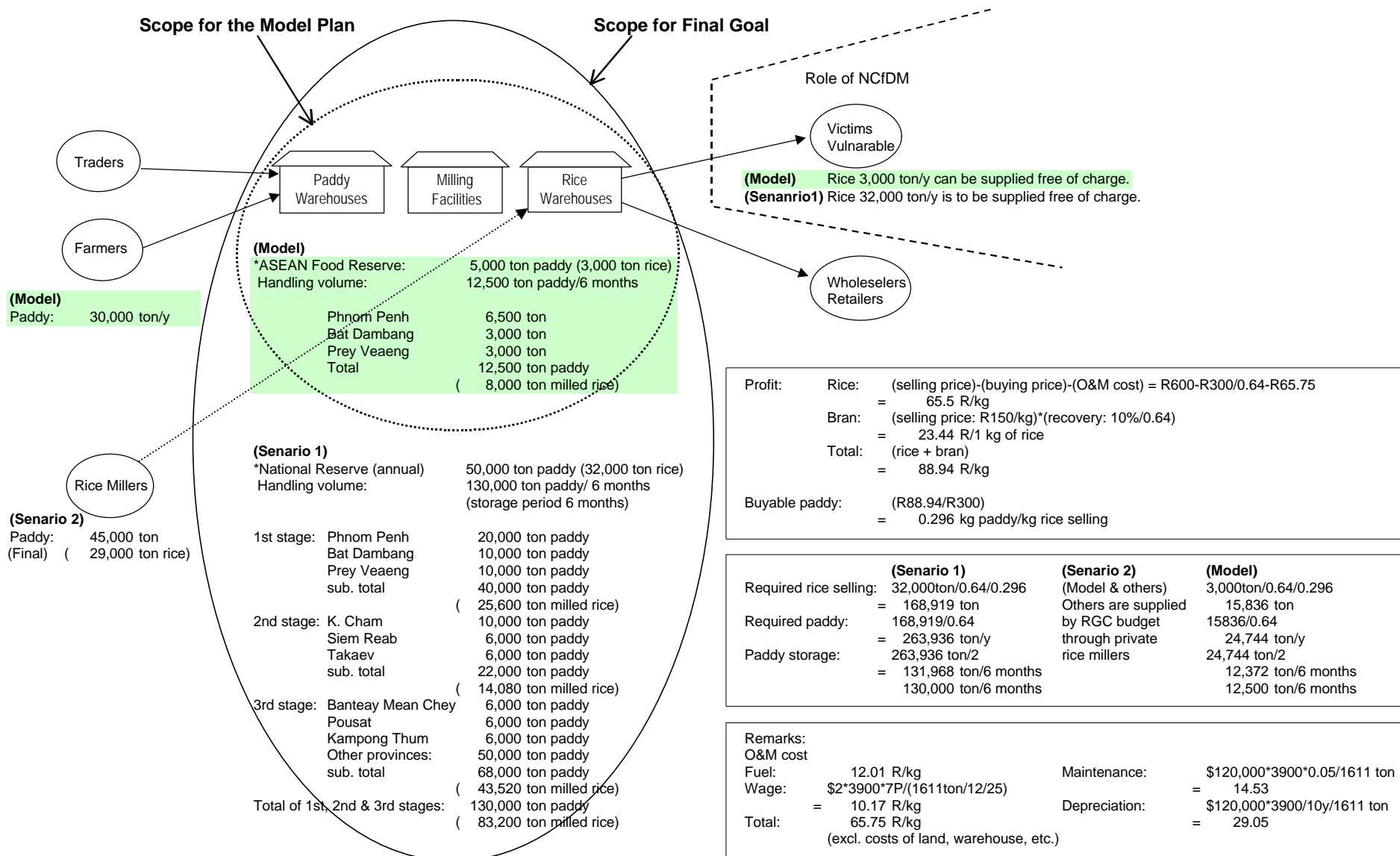
- 1) At first, as a model case, the 1,000 tons of paddy reserve shall be increased to 5,000 tons corresponding to the obligatory volume in the ASEAN Food Security Reserve scheme.
- 2) Finally, 32,000 tons of rice (equivalent to 50,000 tons of paddy) reserve shall be attained, taking into consideration that the rice supply by WFP is about 28,000 tons annually, the supply by NCfDM is 1,300 tons and some other supply by NGOs,
- 3) To generate a fund for free of charge distribution to the vulnerable people, buy paddy and sell milled rice. To attain the distribution of 32,000 tons of rice, 130,000 tons of paddy shall be handled in half a year (260,000 tons/year).
- 4) The loss by insects tends to increase rapidly from six months after starting the storage, while influence of fumigation treatment on the environment and a taste of rice should be avoided. Period of reserve, therefore, shall be 6 months.

(3) Reserve place

- 1) In order to reduce the transportation cost, reserve place having a good accessibility should be selected.
- 2) In order to reduce the investment cost, land and facilities owned by the government and GTC should be utilized.
- 3) The places of large production or large consumption of rice should be selected.
- 4) Phnom Penh, Bat Dambang and Prey Veang are preliminarily selected as for the places for a model case.
- 5) The places for food reserve shall be increased step-by-step by extending a model case to other provinces. After a model case in the above preliminarily selected places as the first stage, it is planned that Kampong Cham, Siem Reap, Takaev are in the second stage, Banteay Mean Chey, Pousat, Kampong Thum are in the third stage and other remaining provinces in the final stage.

The idea of the project is shown in the following chart.

Idea of the Project



6.6.3 Model Plan

This Project covers only up to a stage of implementation of the model case as an urgent task (hereinafter called as model plan). The model plan aims at establishing the realistic policy and sustainable system for food reserve. Also it aims at attaining the food reserve corresponding to the ASEAN Food Reserve scheme.

The model plan can be phased into two stages: study (planning) stage and implementation stage. The major activities are as follows.

(1) Major activities

1) Study stage

- In order to chalk out the overall plan of food reserve, present conditions shall be studied and reconsider the selected places for the implementation of the model plan.
- Quantity for national food reserve should be reviewed and verified.
- Examine the possibility of usage, capacity, necessity of repairing and the utilization plan by surveying the present conditions of warehouses owned by MOC and GTC. Especially, utilizing of existing warehouses in the model plan areas shall be planned for the implementation of the model plan.
- Rate of usage, performance, operation and maintenance of the existing rice mills owned by GTC should be surveyed. Especially, the existing rice mills in the model plan areas shall be planned for the implementation of the model plan.
- Proposed output shall be "Paddy Reserve Plan in Whole Country", "Usage Plan of Reserved Paddy", " Usage Plan of Existing Warehouse owned by MOC and GTC", "Usage Plan of Existing Rice Mills owned by GTC", "Organization Improvement Plan of GTC" and the model implementation plan.

2) Implementation stage

- Repairing of the existing warehouses (paving of the floors, repairing and painting of roofs and walls, repairing of drainage, repairing of access and so on)
- Repairing of rice mills (changing of pre-cleaner and indent type grader)
- Building of new rice mill

(2) Contents of the Model Plan

1) Flow for Rice Procurement and Distribution

- The procurement is made in the form of paddy. The paddy will be mainly procured from traders, however, procured from nearby farmers and farmer's group.

- It will be stored in warehouses as the food reserve, and it will be milled and distributed 6 months later. After milled and distributed, paddy equivalent to that quantity will be procured as the food reserve as soon as possible.
- Distribution of milled rice is to be a role of NCfDM.
- When the paddy price of the area declines, purchase will be promoted, specifically.

2) Warehouse facilities

- Basically, warehouses owned by MOC and GTC are used.
- Taking an extension in future into consideration, select the places where there are many warehouses.
- Taking into account the points in selection mentioned in the previous section (Outline of the project), following places are selected as the best places.

Proposed provinces and places

Province	MOC possession		GTC possession	
	Number / Capacity of warehouse (ton)	Place	Number / Capacity of warehouse (ton)	Place
Phnom Penh	None	-	Free 14 houses / 34,750 4 houses / 3,400	<i>Russey Keo, km-6</i> Chanca Mon
Bat Dambang	5 houses / 10,468	<i>Thmar Kaul</i>	1 house / 7,000	<i>Thmar Kaul</i>
	2 houses / 4,728	Sanke		
	4 houses / 16,146	Bat Dambang		
	1 house / 7,776	Moung		
Prey Veang	1 house / 2,250	Kampong Lend	None	-
	2 houses / 5,575	Ream Ro		
	1 house / 1,620	Neak Loung		
	4 houses / 10,740	<i>Prey Veang</i>		
	1 house / 1,620	Kaneh Reach		
Kampong Cham	1 house / 1,260	<i>Kampong Cham</i>	3 houses / 6,000	<i>Kampong Siem</i>
	4 houses / 14,273	Thabong Khmom		
	1 house / 1,620	Kroach Chmar		
	1 house / 1,620	Memot		
	1 house / 1,620	Ou Reang Ov		
	1 house / 1,620	Bam Ber		
	1 house / 1,575	Srey Sonithor		
	1 house / 1,620	Steung Trang		
	2 houses / 4,860	Chamkar Leur		
	1 house / 1,425	Prey Chhor		
	2 houses / 2,676	Cheng Prey		
	1 house / 2,200t	Batheay		

Note: The italic character shows the proposed places.

Source: DOCs

- Since Phnom Penh is the largest consumption place, the maximum quantity 6,600 tons shall be reserved at Phnom Penh. However, in other two places, the same quantity will be reserved, 3,000 tons each at the two places.
- Since there are existing warehouses more than expected in each province, they will be used after repair. Remaining warehouses will be lent to rice millers, traders, farmers or farmers' organization, etc. at the preferable rental rate.

3) Rice mill facilities

- GTC possesses two rice mills (total capacity 2.0 ton/hr) in Phnom Penh and one rice mill (2.0 ton/hr) in Bat Dambang. In Kampong Cham, one rice mill is under construction.
- A rice mill of 1.0 ton/hr capacity can process about 1,500 tons in a year. Therefore, 3,000 ton/year can be processed in Phnom Penh and 3,000 ton/year can be processed in Bat Dambang at present. There are no facilities in Prey Veang.
- Existing facilities are insufficient except for Bat Dambang. A rice mill of 2.0 ton/hr capacity will be required additionally in Phnom Penh. Same mill of 2.0 ton/hr capacity will be required newly in Prey Veang. If Kampong Cham is selected, rice mill under construction can be used.
- The consumers in the cities, especially in Phnom Penh, Takaev, Kandal are tending to prefer high quality rice. Therefore, milled rice to be sold is required to be of high quality one. In order to attain this, selection of high quality seed, collection of high quality paddy will be necessary with the help of MAFF. To improve milled rice quality, improvement of milling technology as well as the improvement of milling equipment need to be carried out. Specifically, for the old rice mill in Russey Keo / Phnom Penh, replacement of the pre-cleaner, grader, etc. will be necessary.

Rice Mill owned by GTC

Province	Place	Capacity	Year of construction	Condition
Phnom Penh	Russey Keo	125kw, 1.0t/h	1997	Good, New type
Phnom Penh	Russey Keo	77kw, 1.0t/h	1970	Good, Old type
Bat Dambang	Thmar Kaul	340kw, 2.0t/h	1999	Good
Kampong Cham	Kampong Siem	-	Under construction	-

Source: GTC

4) Management and Operation

- Since the food reserve is a role of the government, the government and/or the company under the government control should carry out the reserve. At this point, GTC is considered to suit most.
- Already GTC owns rice mills and manpower for operation is supposed to be enough. However, capable technicians are still insufficient and technical transfer needs to be carried out during the study stage and implementation stage of the model plan. Seminar for technology transfer and/or study tour to the neighboring countries, which are well advanced in rice industry, should be considered.
- Since the food reserve is a role of the government and it is not for making profit, deduction of VAT levied on the paddy buying/rice selling for the food reserve should be considered.
- 3,000 tons of milled rice, which is equivalent to 5,000 tons of paddy, shall be distributed to the disaster victims and the vulnerable people free of charge. Details of the distribution, such as “how to distribute”, “to whom” and “how much”, shall be discussed with NCfDM. NCfDM shall directly take charge of the distribution.

- It is necessary to establish the supply system for the urgent food requirement by the ASEAN countries. The urgent food supply is necessary in the form of milled rice. But it is difficult to process into milled rice in a short time only by GTC-owned rice mills, therefore the support from private rice millers will be indispensable in such case. To process extra volume of paddy in a short period, longer time operation is necessary in order to maintain the ordinary supply to the markets. In case the 1.0-ton/hr rice mill is operated with 2-shifts, the quantity of 5.0 tons can be produced by added-work per day. Therefore, in case preparing 3,000 tons of rice within 10 days, it would require 60 private rice millers to cooperate.

Organization and Staff of GTC

Board of Director :	Rep. of MOC, COM, MoEF, MOP, MAFF, Gen. Dir. of GTC, Rep. of GTC Employee	
Total number of staff :	Female: 54 staff, Male: 120 staff	
< Department >	< Office & Branch >	< Number of Staff >
Admi. Department	Admi. office, Supply office, Salary office	41
Accounting Department	Accounting, Financial, Audit	20
Technical Department	Construction, Machinery, Transportation	18
Marketing Department	Marketing, Research, Warehouse	55
	Phnom Penh rice mill	15
	Kampong Cham rice mill	1
	Dat Dambang rice mill	5
	Kampong Som Branch	19

6.6.4 Personnel required for the Model Plan

(1) Study stage

The study stage includes the study of the present conditions, the re-examination of the basic concept of the food reserve plan and the basic designing for the model plan. The required personnel are as follows:

1) Team Leader/Reserve Policy

Team leader shall be in charge of the overall reserve plan. Keep the close discussions with the agencies concerned and with the help of other experts, the leader completes the designing of the plan.

2) Market Economy

Cambodia is promoting a market economy, under which the model plan and the overall plan are designed. This expert shall collect/prepare the basic data for the food reserve plan, and chalk out the desirable conditions of the market economy in the future.

3) Marketing Infrastructure

This expert shall examine and plan the ways of the marketing system based on the food reserve concept. Plan the mode of material handling and marketing infrastructure necessary

for paddy procurement, distribution of milled rice and urgent food supply.

4) Facilities and Equipment

This expert shall study the practical methods of rice/paddy storage and designs the size, kinds, number of facilities and equipment for the model plan. Also, plan the operation and maintenance systems for facilities and equipment.

5) Social Development

This expert shall study the sectors/stake-holders concerned and examine the relations among them. Plan the practical ways for making mutual cooperation, for removing conflicts, etc.

6) Quality Control

This expert shall plan inspection system, inspection equipment and its methods of operation based on the rice quality standards. Also, participate in planning of rice mill facilities and equipment.

(2) Implementation stage

In this stage, detailed design and implementation will be conducted. It shall include seminar for technology transfer and study tour to the neighboring countries. The required personnel are as follows:

1) Leader/Reserve Plan

He shall review the basic design and design the detailed plan for implementation. In the implementation period, he shall supervise the works. He shall plan and carry out the technology transfer seminar to the agencies concerned and the study tour to the neighboring countries.

2) Marketing Infrastructure

He shall review the basic design and marketing system and means of access to the designed places. He shall confirm and design a detailed plan of access to the designated places suitable for model implementation.

3) Facility and Equipment

He shall review the basic design and make a detailed design, especially precisely examine the scale of facilities and equipment, operation and maintenance system. In the implementation period, he shall supervise the installation of the facilities and equipment. He shall conduct training on operation and maintenance of the facilities and equipment.

4) Quality Control

He shall review the inspection system, inspection equipment, way of inspecting, way of implementing, etc. In the implementation period, he shall conduct training to the staff who in charge of the operation and maintenance.

5) Cost Estimation

He shall study the unit price of equipment/materials/works and estimate the overall project cost for the model plan.

Required personnel for study and implementation periods are shown in the next chart.

6.6.5 Recommendation

- (1) The consensus among the ministries and agencies concerned is necessary before conducting this project. MOC should take an initiative in arriving at the consensus.
- (2) The consensus includes a food reserve concept, reserve quantity, a way of using reserved paddy, a way of securing a budget for the food reserve, a way of processing quantity, a handling way at the urgent time and so on.
- (3) The handling volume in the model plan is 50,000 tons/year (about 1.2% of the total paddy production in the country) and it would not affect the private business of rice millers. When the handling volume reaches the level of the overall plan, the government's mission for relieving the disaster victims and the vulnerable can be attained. However, there would be influence to the private business of rice millers, since the handling volume of paddy will be more than 260,000 tons/year (about 6.4% of the total paddy production). In this case, any means for collaborating with the private sectors should be made.
- (4) In an emergency, paddy should be processed into milled rice immediately. Therefore, the support from the private rice millers shall be necessary. In case the 3,000 tons of milled rice is required within 10 days, after implementation of the model plan, it would be necessary for 60 private millers to cooperate directly for the activity. However, since about 50 rice mills of a capacity of 2.0 ton/hr will be established after realization of the overall plan, direct cooperation of the private rice millers would not be necessary.
- (5) The milled rice equivalent to the quantity of food reserve can be distributed every year free of charge. It shall be used for the relief of the disaster victims and the vulnerable people. As NCfDM have been carrying out for the last few years, NCfDM shall be in charge of the distribution. For that, the consensus between the agencies should be essential.
- (6) GTC succeeded many staff from the former government-owned companies and there may be too many staff in some sections such as marketing section, etc. As the model plan and succeeding stages of the project are realized, the marketing section must increase its importance. However, it is considered still necessary to reduce the number of staff.

Implementation Schedule for the Model Plan (Draft)

	Month												Man-month		
	2	4	6	8	10	12	2	4	6	8	10	12	Foreign	Local	Total
1 (Study stage)	[Gantt chart for Study stage]														
Study in Local Japan	[Gantt chart for Study in Local Japan]														
(Implementation stage)	[Gantt chart for Implementation stage]														
Detailed Study	[Gantt chart for Detailed Study]														
Bidding	[Gantt chart for Bidding]														
Procurement	[Gantt chart for Procurement]														
Construction	[Gantt chart for Construction]														
2 Required personnel (Study stage)	[Gantt chart for Study stage personnel]														
1. Team Leader	[Gantt chart for Team Leader]												3	6	9
2. Economic Develop.	[Gantt chart for Economic Develop.]												3	6	9
3. Market Infra.	[Gantt chart for Market Infra.]												1	2	3
4. Market Facilities	[Gantt chart for Market Facilities]												2	5	7
5. Society Develop.	[Gantt chart for Society Develop.]												2	6	8
6. Quality Control	[Gantt chart for Quality Control]												1	2	3
Sub-total:													12	27	39
(Implementation stage; 3 sites, 3,000 ton/year)	[Gantt chart for Implementation stage personnel]														
1. Team Leader	[Gantt chart for Team Leader]												3	7	10
2. Market Infra.	[Gantt chart for Market Infra.]												2	2.5	4.5
3. Market Facilities	[Gantt chart for Market Facilities]												3	11	14
4. Quality Control	[Gantt chart for Quality Control]												2	4	6
5. Cost Estimation	[Gantt chart for Cost Estimation]												2	0	2
Sub-total:													12	24.5	36.5
Total (Man-month)	9	12	6	8	4	10	4.5	6	4	4	2	6			75.5

Estimated cost (x USD 1,000):

Personnel	(1000USD)	(Mon-month)	-Warehouse:	35	104
-Study	815	39	-Access road, drain, etc.:	9	26
-Implementation	760	37	-Facilities:	1,565	3,130 (1 rehabilitation, 2 new facilities)
Sub-total	1,575	76	Sub-total	1,609	3,261
					Total
					(drop fractions) 4,835