

## **M.2 Natural Environmental Assessment**

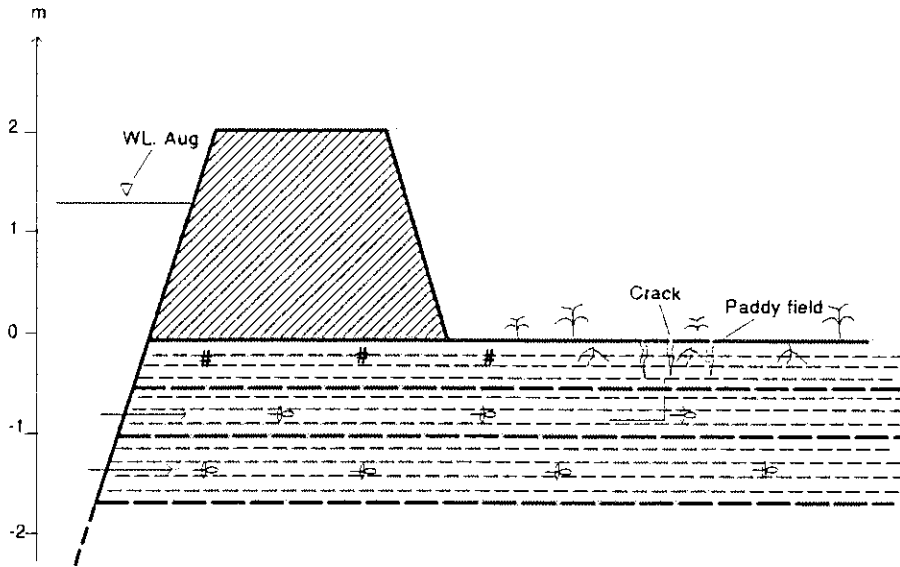
### **M.2.1 Impact Assessment and Mitigation Measures**

Environmental issues discussed in the Natural Environmental assessment are summarized in the following table.

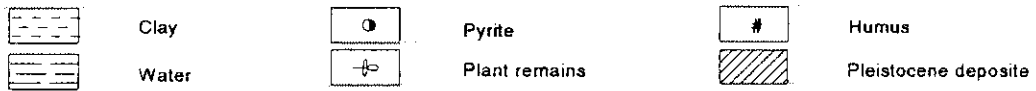
**SUMMARY OF ASSESSMENT AND MITIGATION MEASURES**

<b>Environmental Issues</b>	<b>Assessment</b>	<b>Recommended Mitigation Management Plan</b>
Soil Acidification induced by excavation of canal and dike elevation	Mitigable	Special soil excavation technique should be applied for canal works in order to minimize the release of acidic substances from dike elevation work. Techniques consists of 1) covering of the pyritic material with good top soil and 2) provision of drainage ditches at the field side of the dike and connecting the ditches at the field canals so as to prevent acid water to enter the paddy field at the beginning of the rainy season.(See the following page for the schematic description of the technique.)
Changes in Surface Water Hydrology	Insignificant	Assessed as insignificant.
Degradation of Surface Water Quality - inside Unified dike units-	Mitigable	Operating pumps and sluices for flushing in order to improve water quality. Pump operation accelerates exchange of water inside and outside the dike units. To monitor efficiency of the measure, water quality monitoring should be accompanied. Details on water quality monitoring is given in the following part.
Degradation of Surface Water Quality -possible downstream surface water contamination by SS	Unknown	Selecting the suitable implementing schedule which could reduce the time of impacts. This should be examined as part of water quality monitoring.
Degradation of soil fertility	Unknown	This is unknown impact because of insufficient baseline data. Parameters of Water Quality Monitoring should include content of SS brought into the field.

## PRESENT DIKE

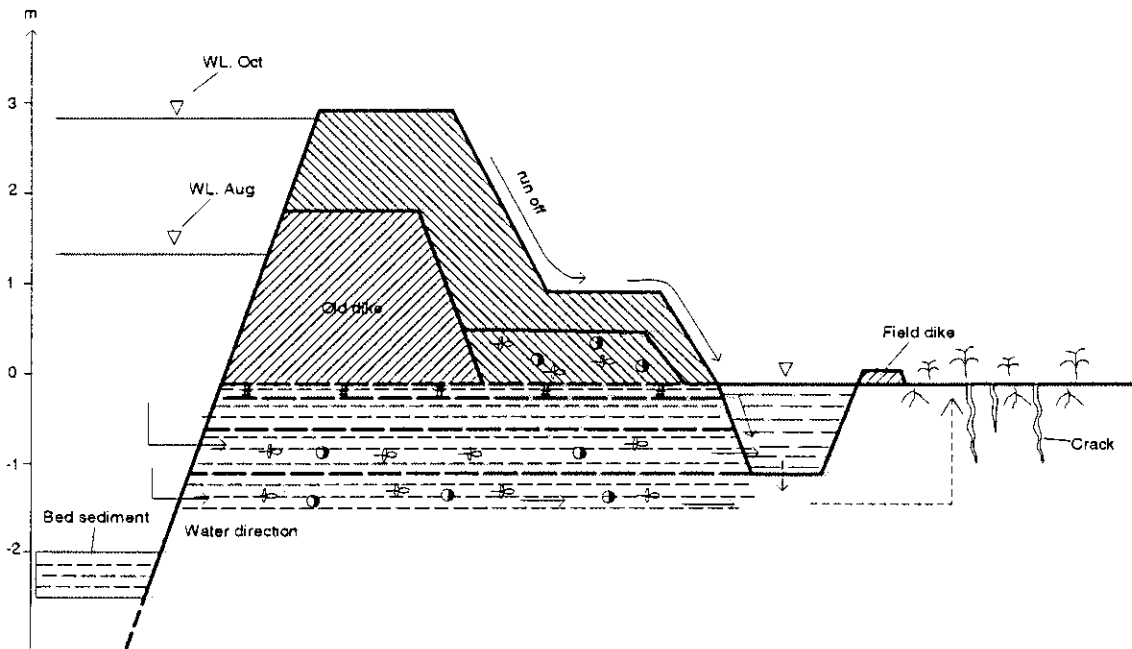


### Legend

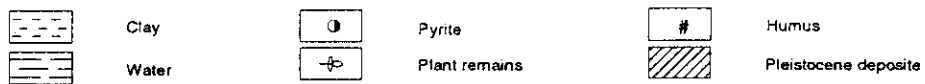


Fig

## PROPOSED DIKE DESIGN



### Legend



Fig

Environmental Issues	Assessment	Recommended Mitigation Management Plan
<p>Degradation of Surface Water Quality - possible downstream surface water contamination by agrochemicals</p>	<p>Unknown</p>	<p>Continuation of IPM training programs for rice cultivation which is being carried out by crop protection department. The goal of this management measure is to reduce contamination of surface water from pesticides. The most effective approach to reducing pesticide pollution of waters is,</p> <ol style="list-style-type: none"> <li>1) to release fewer pesticides and/or less toxic pesticides into the environment and,</li> <li>1) to use practices that minimize the movement of pesticides to surface water.</li> <li>2) Pesticides should be applied only when an economic benefit to the producer will be achieved. When pesticide applications are necessary and a choice of materials exists, farmers are encouraged to choose the most environmentally benign pesticide products. Users must apply pesticides in accordance with the instructions on the label of each pesticide product.</li> </ol> <p>Measures includes</p> <ol style="list-style-type: none"> <li>1) Application equipment should be calibrated and inspected for wear and damage, and repaired when necessary.</li> <li>2) Farmers need to consider the physical characteristics of the site including mixing, loading and storage areas for the leaching and/or runoff of pesticides. Proximity to surface water, and shallow aquifers should be considered.</li> <li>3) Use IPM strategies to minimize the amount of pesticides applied.</li> <li>4) When pesticide applications are necessary and a choice of materials exists, consider the persistence, toxicity, and runoff and leaching potential of products along with other factors, including current label requirements, in making a selection.</li> <li>5) Users must apply pesticides in accordance with the instructions on the label of each pesticide product and, when required, must be trained and certified in the proper use of the pesticide. Labels include a number of requirements including allowable use rates; classification of pesticides as "restricted use" for application only by certified applicators; safe handling, storage, and disposal requirements; restrictions required to protect ground water; and other requirements.</li> </ol>
<p>Changes in rodent population</p>	<p>Mitigable</p>	<p><b>Physical and mechanical measure:</b> Some means such as mechanical trap, hand keeping rat by digging burrow, glues, trap barrier system, rice trap in combination with barrier system are used for hunting the rats. <b>Chemical measure:</b> Fast death chemical (Zinc phosphide) and slow death chemical (Brodifacoum, Diphacinone) or vegetable drugs (eg. hat cu dau-Pachyrhizus erosus, hat ma tien-Strnuxiomica, hat mac lat-Milletia ichthyoch, hat ba dau-Croton tiglium, vo cay sui-Antiaris toxicaria, nhua xuong rong-Euphorbia antiquorum) are used for killing the rats. <b>Biological measure:</b> Cat and dog are domesticated for hunting the rats. Apart from that, rat poison made by bacterium <i>Samonella enteritidia</i> is used recently for killing the rats.</p>

<b>Environmental Issues</b>	<b>Assessment</b>	<b>Recommended Mitigation Management Plan</b>
Loss of fish resources	Unknown	<p>Prohibition of fishing brood stocks/ fingerlings and exterminated fishing methods. Maintaining flood duration, provision of fishpasses, Melaleuca forest-cum-black fish farming system</p> <p><b><i>Rice-cum-black fish farming system applied for double crop rice fields</i></b></p> <p>In the rice field area of 20,000 m<sup>2</sup> (for example), a peripheral canal system occupying 10% or 2,000 m<sup>2</sup> may be constructed for raising black fish such as <i>Ophiocephalus striatus</i>, <i>Anabas testudineus</i>, <i>Trichogaster pectoralis</i>, <i>Notopterus notopterus</i> and <i>Clarias macrocephalus</i>. During March and April the black fish are released into canal system with the density of 2.5-3 nos./m<sup>2</sup> water surface. To create suitable conditions for black, the depth of water must be kept at the minimum levels of 1.1-1.2 m in canal system and 0.2-0.3 m in rice field. When the Summer-Autumn rice (April-July) to be harvested, the fish will be living in canal system. After 6-8 months of farming, the commercial fish will be harvested and the small size ones will be kept in canal for the next harvest.</p> <p>Cost estimated for building a such peripheral canal system of 2,000 m<sup>2</sup> is calculated as follows: 2,000 m<sup>2</sup> x 1m x 5,000 VND/m<sup>3</sup> = 10,000,000 VND or 714 USD.</p> <p><b>Pond fish farming system</b></p> <p>Most ponds recognized in project area are rather small with the water surface of 150-400 m<sup>2</sup>, the large ponds of 1,000-1,200 m<sup>2</sup> are very scarce. The use of lime to decrease acidification is very necessary because all of the ponds are constructed in severe acid sulphate soils. Based on the local experience, with the lime concentrations of 2.5-3 tonnes/ha coupled with green manures of 2-2.5 tonnes/ha used, the pond after 2 and 4 years of improvement can be practiced for rearing black fish and Chinese carps, respectively. The cultured density is estimated to be 3.5-4 nos./m<sup>2</sup>. The rearing season is began in the early rainy season and the harvest is carried out during the middle of dry season. Agricultural by-products (eg. rice bran, broken rice) and trash fish are used for feeding Chinese carps and Snake head fish, respectively. The average yield is estimated to be 2.5-3.5 tonnes/ha/year.</p> <p style="text-align: center;"><b>SMALL FLOATING CAGES IN THE CANALS</b></p> <p>The small cages are stocked with black fish and several other species, and fed by owner-prepared and pelleted feeds. Some cages are situated in canals inside and outside project area.</p>

## M.2.2 Monitoring Plan

### M.2.2.1 Surface Water Quality Monitoring Program

#### (1) Objectives

The water quality monitoring program is proposed to deal with the following objectives:

- Surface Water pollution induced by unification of dike units
- Water pollution induced by soil excavation and associated acidification
- Possible downstream impacts of the project

This plan is designed to monitor water quality for the following two separate areas.

- 1) F/S area
- 2) Pre-F/S area

The project will be implemented with priority on F/S area which will serve as a model of the projects replication for Pre-F/S area. Therefore, water quality monitoring must firstly be conducted in and vicinity of the F/S area. Findings of the monitoring may be applied for the implementation of the project for Pre-F/S area. In this context, sampling sites for F/S area should be a larger number for a given area than the case for Pre-F/S area.

#### (2) Content of monitoring

The Surface Water Quality Monitoring Network for the Mekong Delta implemented by SIWRP in the Lower Mekong Basin through Mekong River Commission has been carried out since 1985 covering the project adjacent area. However, available water quality data inside the project area is very limited at the moment. Therefore, this monitoring program should be commenced before project implementation to establish baseline database of the water quality.

#### Parameters

Physical-chemical parameters	Organic matter parameters	Pesticide	Biological parameters
<ul style="list-style-type: none"> <li>- pH</li> <li>- Conductivity (EC)</li> <li>- Total suspended solids (TSS)</li> <li>- Nitrate (NO<sub>3</sub>-N)</li> <li>- Ammonium (NH<sub>4</sub>-N)</li> <li>- Total Nitrogen (T-N)</li> <li>- Phosphate (PO<sub>4</sub>-P)</li> <li>- Total Phosphorous (T-P)</li> <li>- Dissolved Oxygen (O<sub>2</sub>)</li> </ul>	<ul style="list-style-type: none"> <li>BOD<sub>5</sub></li> <li>COD(KMnO<sub>4</sub>)</li> </ul>	<ul style="list-style-type: none"> <li>Organochlorin</li> <li>organophosphorous</li> </ul>	<ul style="list-style-type: none"> <li>Coliform</li> </ul>

#### Sampling regime

Monthly sampling regime will be maintained. Physical-chemical parameters are analyzed for each sample and heavy metals, pesticides, bacteria are analyzed with some definite periods.

### Sampling stations

#### Total 12 stations for Pre F/S area

Inflow	Block 4 : 1 station before flowing in Block at Dong Tien canal and An Phong – My Hoa canal
	Block 8 : 1 station before flowing in Block at Nguyen Van Tiep canal
Inside dike systems	Block 4 : 4 stations
	Block 8 : 4 stations
Outflow	Block 4 : 1 station
	Block 8 : 1 station at canal No.7

#### **Total 5 stations for F/S area**

Inflow	1 station
Inside dike systems	3stations
Outflow	1station

### M2.3.2 Aquatic Biological Monitoring Program

#### *(1) Objectives*

Aquatic biological monitoring plan is proposed to deal with the possible impacts on aquatic and terrestrial biological resources.

To establish baseline database of the water quality, this should be commenced before project implementation.

#### *(2) Content of monitoring*

##### **Parameters**

Aquatic Environment (For F/S and Pre-F/S)

- Aquatic Species composition and density of phytoplankton (Algae)
- Species composition and density of zooplankton
- Species composition and density/biomass of zoobenthos
- Fish species composition
- Densities of broodstock and seed

Terrestrial Environment (For Pre-F/S)

- Native tree species composition
- Bird species composition
- Species composition and density of rat

**THE STUDY ON INTEGRATED AGRICULTURAL DEVELOPMENT PLAN  
IN THE DONG THAP MUOI AREA VIET NAM FINAL REPORT**

*Sampling Regime*

Monthly sampling regime will be maintained for Aquatic Environment.

*Sampling Stations*

Total 12 stations for Pre F/S area

Inflow	Block 4	: 1 station before flowing in Block at Dong Tien canal and An Phong – My Hoa canal
	Block 8	: 1 station before flowing in Block at Nguyen Van Tiep canal
Inside dike systems	Block 4	: 4 stations
	Block 8	: 4 stations
Outflow	Block 4	: 1 station
	Block 8	: 1 station at canal No.7

**Total 5 stations for F/S area**

Inflow	1 station
Inside dike systems	3stations
Outflow	1station

**Cost Estimate for Surface Water Quality Monitoring (For F/S area)**

Cost estimate for one year *86,800,000 VND equal US\$ 6,200*

**MONITORING PLAN FOR  
FEASIBILITY STUDY AREA FOR ONE YEAR**

No	Items	Amount (a1.a2)	a1	a2	Price (VND)	Cost (VND)
<b>I.</b>	<b>Survey</b>					<b>3,000,000</b>
	- Allowance	Person.day	2	6	100,000	1,200,000
	- Car	km	300		3,000	900,000
	- Boat	Day		3	300,000	900,000
<b>II.</b>	<b>Monitoring</b>					<b>73,800,000</b>
2.1	Sampling					
	- Sampling	Station.monh	5	12	50,000	3,000,000
	- Collecting	(Personi/time).day	1	48	100,000	4,800,000
	- Car	(km/time).month	300	12	3,000	10,800,000
	- Boat	(day/time).month	2	12	400000	9,600,000
2.2	Analysis					
	- Phy-chemical	St.(samp.year)	5	12	260,000	15,600,000
	- Pesticides	St.(samp.year)	5	3	1,000,000	15,000,000
	- Heavy metals	St.(samp.year)	5	6	200,000	6,000,000
	- Coliform	St.(samp.year)	5	12	150,000	9,000,000
<b>III.</b>	<b>Collection</b>					<b>10,000,000</b>
	<b>TOTAL</b>					<b>86,800,000</b>



**Cost Estimate for Surface Water Quality Monitoring (For Pre-F/S area)**

Cost estimate for one year **217,780,000 VND equal US\$ 15,556.-**

(Details presented on Table below)

**MONITORING PLAN FOR PROJECT AREA  
(BLOCK 4 AND 8) FOR ONE YEAR**

<b>No</b>	<b>Items</b>	<b>Amount (a1.a2)</b>	<b>a1</b>	<b>a2</b>	<b>Price (VND)</b>	<b>Cost (VND)</b>
<b>I.</b>	<b>Survey</b>					<b>3,300,000</b>
	- Allowance	Person.day	2	6	100,000	1,200,000
	- Car	km	400		3,000	1,200,000
	- Boat	Day		3	300,000	900,000
<b>II.</b>	<b>Monitoring</b>					<b>204,480,000</b>
2.1	Sampling					
	- Sampling	Station.monh	12	12	50,000	7,200,000
	- Collecting	(Personi/time).day	2	60	100,000	12,000,000
	- Car	(km/time).month	400	12	3,000	14,400,000
	- Boat	(day/time).month	2	12	400000	9,600,000
2.2	Analysis					
	- Phy-chemical	St.(samp.year)	12	24	260,000	74,880,000
	- Pesticides	St.(samp.year)	6	6	1,000,000	36,000,000
	- Heavy metals	St.(samp.year)	12	12	200,000	28,800,000
	- Coliform	St.(samp.year)	12	12	150,000	21,600,000
<b>III.</b>	<b>Collection</b>					<b>10,000,000</b>
	<b>Information</b>					
	<b>TOTAL</b>					<b>217,780,000</b>

**Aquatic Biological Monitoring Program for Feasibility Study Area**

No	Items	a1.a2	a1	a2	Price-VND	Cost-VND
<b>I. General Survey</b>						<b>3,400,000</b>
	- Allowance	Person.day	4	4	100,000	1,600,000
	- Car	Km	400		3,000	1,200,000
	- Boat	Day		2	300,000	600,000
<b>II Monitoring of AE</b>						<b>89,600,000</b>
2.1	Sampling					
	- Allowance	Person.day	4	36	100,000	14,400,000
	- Car	Km/time.month	400	12	3,000	14,400,000
	- Boat	Day/time.month	2	12	400,000	9,600,000
2.2	Analysis					
	- Phyto-species	Samples.month	5	12	80,000	4,800,000
	- Phyto-density	Ditto	5	12	80,000	4,800,000
	- Zoopl-species	Ditto	5	12	80,000	4,800,000
	- Zoopl-density	Ditto	5	12	80,000	4,800,000
	- Zoobe-species	Ditto	5	12	80,000	4,800,000
	- Zoobe-biomass	Ditto	5	12	80,000	4,800,000
	- Fish species	Ditto	5	12	80,000	4,800,000
	- Fish biomass	Ditto	5	12	80,000	4,800,000
	- Fish seed	Ditto	5	12	80,000	4,800,000
2.3	Reporting	Report	4		2,000,000	8,000,000
<b>III Terrestrial Environment</b>						<b>46,000,000</b>
	- Allowance	Person.day	3	36	100,000	10,800,000
	- Car	Km/time.month	400	12	3,000	14,400,000
	- Boat	Day/time.month	1	12	400,000	4,800,000
	- Analysis of trees	Sample	50		80,000	4,000,000
	- Analysis of bird	Sample	50		80,000	4,000,000
	- Analysis of rat	Sample	25		80,000	2,000,000
	- Reporting	Report	3		2,000,000	6,000,000
<b>Total</b>			<b>139,000,000 equal 9,928 USD</b>			

**Aquatic Biological Monitoring Program for Pre-F/S**

No	Items	a1.a2	a1	a2	Price-VND	Cost-VND	
<b>I General Survey</b>						<b>4,800,000</b>	
	- Allowance	Person.day	4	6	100,000	2,400,000	
	- Car	Km	400		3,000	1,200,000	
	- Boat	Day		4	300,000	1,200,000	
<b>II Monitoring of Aquatic Environment</b>						<b>176,480,000</b>	
2.1	Sampling						
	- Allowance	Person.day	4	60	100,000	24,000,000	
	- Car	Km/time.month	400	12	3,000	14,400,000	
	- Boat	Day/time.month	3	12	400,000	14,400,000	
2.2	Analysis						
	- Phyto-species	Samples.month	12	12	80,000	11,520,000	
	- Phyto-density	Ditto	12	12	80,000	11,520,000	
	- Zoopl-species	Ditto	12	12	80,000	11,520,000	
	- Zoopl-density	Ditto	12	12	80,000	11,520,000	
	- Zoobe-species	Ditto	12	12	80,000	11,520,000	
	- Zoobe-biomass	Ditto	12	12	80,000	11,520,000	
	- Fish species	Ditto	12	12	80,000	11,520,000	
	- Fish biomass	Ditto	12	12	80,000	11,520,000	
	- Fish seed	Ditto	12	12	80,000	11,520,000	
2.3	Reporting	Report	4		5,000,000	20,000,000	
<b>III Terrestrial Envi.</b>						<b>74,000,000</b>	
	- Allowance	Person.day	3	60	100,000	18,000,000	
	- Car	Km/time.month	400	12	3,000	14,400,000	
	- Boat	Day/time.month	2	12	400,000	9,600,000	
	- Analysis of trees	Sample	100		80,000	8,000,000	
	- Analysis of bird	Sample	100		80,000	8,000,000	
	- Analysis of rat	Sample	50		80,000	4,000,000	
	- Reporting	Report	3		4,000,000	12,000,000	
<b>Total</b>						<b>255,280,000</b>	<b>equal 18,234 USD</b>

### **M.3 Social Environment Assessment**

#### **M.3.1 Introduction**

##### **M.3.1.1 Objectives of the Survey**

The overall objectives of the study are to ensure that the proposed project is environmentally sound and sustainable and that any environmental consequences recognized is to be taken into account in planning and of the project. The results of the survey will serve as a basis for the EIA to be prepared and submitted by the Vietnamese side.

###### **(1) Pre-F/S Area**

The specific objectives of the study are:

- a) to identify key stakeholders and establish the appropriate framework for their participation,
- b) to ensure that the project objectives and incentives for change are appropriate and acceptable to beneficiaries,
- c) to assess social impacts and risks, and
- d) to minimize or mitigate adverse impacts.

The topics examined by the study are:

- a) the groups who are expected to be benefited from services to be provided by the project,
- b) the needs of the groups,
- c) their demands,
- d) their absorptive capacity,
- e) gender issues, and
- f) possible adverse effect on vulnerable groups (and the needs for measures to mitigate or compensate those adversely affected).

###### **(2) F/S Area**

The purpose of the Study in F/S Area is to assess whether the project is acceptable publicly by local people. To achieve these purposes, the study focuses on the following specific objectives;

- to create participation of local people into survey process
- to support key persons of the local counterpart to be familiar with particular approach of bottom up way
- to get information on existing situation in the study area for sharing ideas with local people about their needs on improving their living condition
- to mitigate negative impact of the project on social environment
- to involve local people into the project designing process

- to build public consensus on the project
- to train local cooperators for their capacity building

**M.3.1.2 Survey Method of Pre-F/S Area**

The Social Environmental Impact Assessment Study covers Block 4 in Dong Thap Province and Block 8 in Tien Giang Province. In each block, the study was conducted by a team headed by a sociologist and four assistants from the provincial DARD and District PC. The Commune PCs appointed two to six collaborators to work with the team in fieldwork.

Selection of surveyors was done in consultation with local government and JICA study team. The survey was implemented by the sub-contract basis with local organization, that is Center for Social Development Research & Consultancy. The center assigned 2 team leaders.

The survey was started with Public Hearing in Tien Giang Province (PC of Cai Be District, March 5) and in Dong Thap Province (DARD of Dong Thap Province in Cao Lanh Town, March 6).

The survey activities are shown in the table below.

**Schedule of Survey Activities**

	March	April	May
Preparation	—		
Public Hearing	—		
Qualitative Survey	—	—	
Quantitative Survey	—	—	
Workshop		—	
Data Processing/Reporting		—	—

The study is carried out by applying various qualitative and quantitative techniques. In Block 4, key informant interviews, group discussions, in-depth interviews, family visits to 26 households were used in the qualitative phase. In the quantitative phase, 400 households answered questionnaire. The 400 families are divided into poor families (30%), traders (1%), and rich or not poor families (69%, including double-crop paddy production families and triple crop paddy production families). In Block 8, similar techniques have been applied for 6 families in the qualitative phase and 402 families for the quantitative survey. The study samples for the quantitative survey are poor families (30%), VACR families (20%), triple crop paddy production families (40%) and off-farm families (10%).

### M.3.2 Survey Results of Pre-F/S Area

#### M.3.2.1 Economic Conditions

##### (1) Land Use

##### Land Use in Block 4

(Unit : ha)

Use of Land	Area			
	Phu Cuong	Binh Thanh	Phong My	Phuong Thinh
Agriculture	4,637	3,091	2,176	4,023
Special Use	637	275	56	172
Residential	46	172	244	40
Not-in use	36	300	343	189
Forest	237	--	--	--
Total	5,596 (100%)	3,839 (100%)	2,821 (100%)	4,425 (100%)

Source: DARD of Dong Thap Province, 2000

##### Land Use in Block 8

(Unit: ha)

Use of Land	Area			
	Hau My Bac B	Hau My Phu	Phu Nhuan	Thanh Loc
Agriculture	1,782	948	1,126	2,037
Special Use	6.9	65	71	78
Residential	38	32	63	15
Not-in use	0	0	0	28
Total				

Source: Communes' Statistics, 2000

##### (2) Farming System

In Block 4, monoculture of paddy is dominant and double-crop of paddy is the most popular cropping pattern. Fishing relies on the river and canal systems and in the flooding period.

In Block 8, the government together with the people has invested in dike construction to protect paddy fields from the flood. Therefore, the triple crops of paddy have been stabilized. In addition to this, crop diversification of have been promoted in Cai Lay District, and the trend of changing the land use from paddy or mixed garden to specialized garden has increased. In Cai Be District, the production of high economic value fruits such as mango, longan, orange and mandarin occupies 4,884 ha of the total district area. Aquaculture also has been developed. Households carry out animal husbandry in both blocks in a small-scale and for self-consumption rather than business.

##### (3) Income Sources

In Block 4, paddy production is dominant income source. The paddy production of the surveyed communes in 1999 is as follows:

Phong My: 16,566 tons  
Binh Thanh: 28,104 tons  
Phu Cuong: 24,868 tons  
Phuong Thinh: 25,939 tons

The income from paddy production occupies 81% of the total income of the all surveyed households. Moreover, paddy production provides employment for landless or poor farmers. Their incomes are included mostly in “others” described in the table below.

Annual Income Structure of the Households in Block 4

Income Source	Total Income (1,000VND)	Percentage (%)
Paddy Production	1,993,349	81.0%
Husbandry & Livestock	73,350	3.0%
Fishing	86,250	3.5%
Aquaculture	55,250	2.2%
Fruits Trees	44,600	1.8%
Others	206,194	8.4%

Source: Social Environmental Survey, 2000

In Block 8, income from agriculture occupies 99.5% of the total income of the study area while non-farm income is 0.5%. Income from paddy production is 66.6% of the income from agriculture. With that rate, any minor change in paddy price affects seriously the life of people and the commune budget in the both blocks. In the study period, the decrease in paddy price is one of the major concerns among farmers in both Block 4 and Block 8.

Fruit tree garden producing banana and coconut occupies 12.5% of the income with low economic efficiency. For the last years, due to the decrease in sugarcane and coconut price, a small portion of rich farmers have grown mango and longan with high economic value. There are 40ha of longan in Hau My Phu, 50ha of mango in Hau My Bac B. Longan are grown along the Kinh Xang-Bang Lang-Kinh Giua in completely-closed dike system. The specialized garden with longan or mango occupies 7.3% of the fruit tree garden area of the four study communes in Block 8.

Relating to animal husbandry, the model VAC (gardening, aquaculture and husbandry) is very popular in Block 8. Although the price of pig or piglets and their feeds is not stable, the number of pigs has increased because the farmers have combined husbandry to aquaculture and have known to use by products or waste from agricultural production in husbandry. Aquaculture is increasing to compensate the decrease in natural fish resources. The study reveals that the income from husbandry occupies 18.8% of the total income while that of aquaculture is 1.0% and fishing is 2.4%.

Table below shows that income from the non-farm activities in Phu Nhuan is the highest among the four communes. It is because Phu Nhuan is located close to the National Road No. 1A, which makes the people, access easier to other areas.

Income Sources in Block 8

	Hau My Bac B	Hau My Phu	Phu Nhuan	Than Loc	Total
Triple crop of paddy	60.0%	65.8%	73.5%	73.0%	66.6%
Fruits	3.7%	9.6%	5.0%	12.5%	12.5%
Pigs	23.2%	20.8%	15.3%	11.9%	15.7%
Fish	11.2%	2.5%	3.0%	2.0%	3.8%
Non-Farm	1.9%	1.3%	3.1%	0.5%	0.4%
Total (1,000 VND)	21,288,300 (100%)	21,246,950 (100%)	26,597,050 (100%)	48,639,600 (100%)	122,904,900 (100%)

Source: Commune Statistics, 2000

#### (4) Use and Access to Marketing Services and Commercial Inputs

In both blocks, paddy is sold to collectors who come by big boats to buy the paddy when the harvesting season comes. The collectors decide the price of paddy and usually the paddy price is the lowest in the W-S crop harvesting time. According to the farmers, there is no guaranteed price for the paddy thus the farmers do not feel secure and lose their incentives for paddy production. However, they have to continue to invest in the S-A crop not because of its profit but because of preventing their field from wild weeds, rats and acidify of soil.

Agricultural materials such as insecticides, herbicide, fertilizers and other agro-chemicals are supplied by some SOEs but the majority of the suppliers are private. The private suppliers usually advance the agro-chemicals and fertilizers to the farmers when they need and the farmers will pay back to them in cash after harvest. This type of credit is very common in the study area and the farmers prefer it rather than going to banks to borrow money with complicated paper works. There are different varieties of paddy being used in the two blocks without any official suppliers. The farmers learn among themselves to choose the best sold paddy varieties. The Agricultural Extension Clubs provide their members with new varieties and from there the new varieties are multiplied and disseminated to other farmers.

#### (5) Use and Access to Credit

The farmers are provided from various sources. At the commune level, the farmers can borrow money from the Viet Nam Bank for Agricultural and Rural Development using their land certificates as collateral. The national funds of Hunger Eradication and Poverty Reduction (HEPR) and Job Creation (JC) also provide some of the farmers with credit. In addition to that, the Women's Union forms their saving-credit groups to help poor women generate income. In those sources, the interest rate is low (from 0.7 to 1%/month).



However, as the government fund is limited the farmers have to borrow money from private money lenders with higher interest rate of 6-10%/month when they need. Moreover, many families reveal that when they do not have money to pay for the government fund to renew their loan they often borrow money from moneylenders, thus they are more indebted. In Block 4, as 75% of the study households are in debts, in which 57% borrow money from the government, 18% from the private moneylenders and 25% from both sources, the possibilities of being indebted might be increased.

#### (6) Social Services

##### a) Health Services

In Block 4, the average growth rate of the population is 1.6% yearly in 1998. The growth rate of the rural population has been decreased from 1.9% in 1994 to 1.7% in 1998. Birth rate has been decreased from 2.7% in 1994 to 2.2% in 1998 while the death rate has also been decreased from 0.7% in 1994 to 0.5% in 1998. In Block 8, the average annual growth rate of the population is 1.6% in 1998. The growth rate of the population has been decreased from 2.1% in 1990 to 1.7% in 1998. Birth rate has been decreased 0.02% yearly while the death rate is stable at the rate of 0.6%. The increase in population concentrates in the center of the towns and communes in both blocks.

In Block 4, besides the district hospitals there are medical stations in every commune. One medical doctor heads the medical stations. There are a medical technician, a midwife and a pharmacist or druggist working in the station. The medical station's staff is responsible for common treatment and first aid in case of emergency. They are also taking care of preventive vaccination and other primary health care in the area such as the anti-malnourished program, the clean drinking water program and the anti-malaria program. They are members of the family planning program. There are also private doctors or technicians who provide medical care for the people. In Block 8, the medical stations are equipped well and the activities carried out are similar to those in Block 4. However, there is a lack of medical doctors at the commune medical stations.

##### b) Education

In Block 4, there are primary schools and secondary schools at the commune level. A tertiary high school is needed for the development of the education system. The schools are located on higher area, close to the residential areas to facilitate the children's schooling. The rate of school age children going to schools is more than 98% and the rate of children dropping out of primary schools is 1.7 to 2.5%. There is a big gap between the number of primary school pupils and secondary school pupils. Only 25-35% of the primary school pupils continue secondary schooling, which can lead to a severe shortage of human resources for the development of the commune in the future.

In Block 8, kindergarten and tertiary schools are needed as well as educational equipments. Only 35% of the primary school pupils continue their schooling to secondary schools and only 22% of the secondary

school students go on to tertiary schools.

c) Water

Water is one of the most problematic difficulties in the study area. The canal water is used broadly for washing and bathing. In addition to that, some farmers reported that the use of chemicals in agriculture usually makes the canal polluted thus badly affects the health of the people.

In Block 4, 90% of the households drink canal/river water after processing it with aluminum sulfate and boiling.

Drinking Water in Block 4

	No. of Households	Percentage (%)
Rain Water	7	2
Canal/River Water	358	90
Deep Well Water	35	8
Total	400	100

Source: Social Environmental Survey, 2000

In Block 8, only 57.6% of the households use the deep well water, 33.7% drink rainwater, 8.9% use canal water after processing it with aluminum sulfate as shown in the table below.

Drinking Water in Block 8

	No. of Households	Percentage (%)
Rain Water	1,854	33.7
Canal/River Water	492	8.9
Deep Well Water	3,159	57.4
Total	5,505	100

The study finds that 93% of the households in Block 4 and 48% of the households in Block 8 have not built their own toilets yet. They often use their fishponds as their toilets. Bathroom facilities are also lacking as the people are used to bathe in the canal/river.

d) Housing

One characteristic of housing pattern in the study area is that the majority of houses are located along the canal/river banks, which are used as the dike systems as well as rural road network. Concrete houses are concentrated at the commune center, which is also located along the canal/river where the PC office and other commune public facilities such as post office, medical station, market, etc. are located. Concrete houses are often seen on the dike whose surface has been improved and served as rural road network.

Far away in the secondary or tertiary canals where transportation is very difficult, temporary houses scatter with thatched roof and walls. Owners of these houses are rich farmers whose main houses are

located at the other convenient commune area but whose lands are in the remote field. They only come and stay there sometimes to take care of their paddy fields. Owners of these houses are also the poor farmers who suffer from the lack of rural roads, schools, markets, medical care, etc.

In Block 4, 47% of the houses are called “concrete houses”, made of ferroconcrete; 7% of the houses are “semi-concrete houses” with processed-wooden pillars and tile roof and 46% are “temporary houses” with thatched roof, raw-tree pillars and palm leaf walls. Thanks to the government credit program 256 whose objective is to elevate the houses of the people in the inundation area, many houses are build on stilts or on a high base to cope with the annual October flood. In Block 8, 22% of the houses are concrete houses, 25% are semi-concrete houses and 53% are temporary houses.

#### e) Transportation

In the study blocks, rural road systems are assimilated with the dike systems. Along the main or primary canals, the surface of the dike is paved or covered with small rocks to facilitate the use of motorbike as the most speedy transportation means in the area. Road systems for vehicle reach most of the commune centers where commune’s PC office and market are located in both blocks. Roads between communes are also paved with small rocks and can be used even in the rainy season by motorbikes. However, as roads between hamlets are not paved yet and are very slippery in rainy season, the use of boats is very popular in the two study blocks.

Almost every family has a small boat, which can be used as fishing boat and transportation means of products and people whole the year round and as lifeboat in the flooding period. Therefore, it is not a surprise to know from the study that in Block 4, 3% and in Block 8, 7% of the households chose “good rural road network” as the most important matter in the inundation period.

### (7) Organizations

#### (a) Household

Extended family with 3 generations living together under the same roof is the most common family structure in the study area. The average family size is 6 in Block 4 and in Block 8 the average size is from 5 to 7. The married couple usually stays with the husband’s parents. The couple works in the field but their outputs or income belongs to the parents. The parents usually take care of the house and their grandchildren. All the important matters of the family are discussed between the parents and the couple but the parents and the husband will make the final important decisions.

In this family structure, land use certificate is under the grandfather’s name. When he dies, then grandmother inherits. The land can be given to the children; in this case the land ownership will be under the children’s name. Although men and women can own land, but in practice, women only own her land when her husband dies.

(b) Social Organizations

Besides mass organizations such as the Fatherland Front, the Women's Union, the Farmers' Union, the Youth Union, the Veteran Union, the Red Cross, whose objective is to mobilize their members to fulfill the socioeconomic policies, there are some informal organizations in the study area.

In every commune relations among people are close. When the families are in troubles, 65% in Block 4 and 53% in Block 8 go to their friends and relatives to get help; 20% in Block 4 and 44% in Block 8 of the families go to the mass organizations or the commune justice for help; and 14% of the families try to solve their problems themselves. At the hamlet level, there is a conciliation group consisting of the hamlet head, representatives of mass organizations and hamlet policeman. Conflicts between neighbors are solved firstly by the community itself, then by the conciliation group. Only in case the conciliation group cannot solve the conflict, they forward it to the commune justice.

The farmers organized themselves into small groups of 5-10 members each and when one member needs labors to work in the farm, the group will arrange time to work for him/her without payment. In the harvest period, the poor usually work in groups. Farmers who need labor to harvest their paddy usually contact one hired-labor who will gather some of his relatives or friends to work for the farmers until the work completed. Wage defined by the employer will be the same for all members.

In Block 8, depending on the conditions of the farms, the farmers form dike cooperative groups to protect their farm from the flood. In My Phu B hamlet, Hau My Phu B commune, Group 5 constructed a dike that protects 58.6ha of farm. My Trung hamlet, Hau My Bac B commune constructed a dike system that protects 40ha of farm. This type of cooperatives is newly established, based on the voluntarily efforts of the farmers. There is a management group elected. The management group carries out tasks agreed by the members. The dike cooperatives will adjust the cropping calendar to cope with the flooding. However, this type of organizations is not common in the study area.

In both blocks there are some collectives which deal with water supply or agro-productions. In Hau My Bac B commune, My Quoi service collective invests in materials, breeding trees or pigs, seeds, etc. and negotiate the selling price of the outputs for the farmers. However, this model remains as a pilot stage.

(8) Beneficiary Groups

Block 4 consists of approximately 62,781 persons of which 98% of the households rely on agriculture for their living. The rest of the population involve in handicraft, small industry such as rice milling or production of simple agricultural mechanical equipments or small trade. The population of the beneficiary groups is divided into the rich, the medium and the poor. There is no criterion to define the rich and the medium but the official criterion to classify the poor in all communes is their income. The poor are those

poor are those whose income is less than 25kg of rice/head/month according to the Ministry of Labor, Invalids and Social Affairs. The price of one kilogram of rice is set as 2,500 VND. Table below describes the characteristics of households in the 4 studied communes.

Classification of Households by their Income in Block 4

	Phong My	Binh Thanh	Phu Cuong	Phuong Thinh
Population	1,7058	17,426	6,576	8,235
Poor	313	452	150	372
Landless	936	n.a.	72	229
Total Households	3,552	3,540	1,314	1,517

Source: Commune Statistics, 1999

The poor are those who have no land or very small land, have many children, lack of capital, lack of job. Most of them are hired labors and their livelihoods depend completely on the natural conditions. In the dry season they usually move out of their villages to look for off-farm jobs, especially in January and May, when the paddy is not ready to be harvested thus no employments are available for them. They come back to their village when the harvesting seasons come in March and July. Their average wage for harvesting 0.13ha of paddy field is 20-30kg of paddy (30,000-45,000 VND) and it takes one day for two adults to harvest 0.13ha of paddy field. Since their income depends completely on paddy price, their life becomes more difficult as the paddy price is decreasing. In the inundation period they pick wild flowers to sell at the market. They also catch fish to eat and to sell. They can be employed to excavate soil for house construction. The poor have to face danger when they go out to the field to catch fish during serious inundation period because of high wave and strong wind. Moreover, they have to raise their houses to avoid damage and move to a higher temporary place when the flood is too high and their houses are submerged. The government has applied special policies to support the poor. Each poor household received a social welfare book, which the poor can use to be exempted from various fees such as school fee, hospital fee, rural road improvement fee, etc.

The rich are those who have land and have capital to invest in diversified activities. They have double paddy crops as their main income. For one hectare of paddy field they usually use materials costing 5,100,000 VND. However, the paddy output depends on the natural condition. In 1999, in Phong My commune the productivity decreased due to rats and insects and soils acidified and in Phu Cuong commune, the damage was caused by late and small flood, rats, heavy rain and soil acidified. In fact the W-S crop give them the highest profit, especially for the W-S crop after serious flood. All farmers state that the higher the water level of the flood is the higher profit they gain in the next W-S crop. Table below shows the paddy production in the four communes.

Paddy Production by Crop in 1999 in Block 4

	Winter-Spring		Summer-Autumn	
	Area (ha)	Productivity (ton/ha)	Area (ha)	Productivity (ton/ha)
Phong My	1,897	5.5	1,887	3.5
Binh Thanh	2,800	6.0	2,701	4
Phu Cuong	4,000	5.2	2,200	3.5
Phuong Thinh	3,990	6.5	3,990	6.5

Source: Commune Reports, 1999

In very limited areas farmers have tried triple crops but the productivities and the benefits from the third crop are questioned. In Binh Thanh commune, the farmers have tried triple crops in 1999 but this year they decided to practice double crop as they found out that the third crop did not bring benefit to them. In Phuong Thinh the low productivity of paddy of the third crop in 1999 was due to rats and early flood. In general triple crops of paddy have not been familiar with the farmers because they used to cultivate their paddy in accordance with the nature. If they try the third crop they have to confront the nature such as stormy rain that breaks their paddy stems, early flood that might come before their harvesting, rats that multiplies in the dry areas and the degrade of soil fertility.

They also grow upland crops such as green beans, cucumbers, sweet potatoes, watermelon, cassava between the two paddy crops but the areas for the upland crops is not much compared to paddy areas. The year 1999 was not a good year for upland crops as the rain came early thus the productivity decreased. The farmers lost their crops and could not pay back their loan. They also raise livestock such as pigs and poultry as supplementary income. However, most of them have to sell their animals before the flood coming in August. In addition to that they raise fish and shrimp and these activities give them much higher income than rice. In Phong My commune, some rich families established shrimp cage or pond to raise shrimp in the flooding season and raised them 6-7 months. Totally they invested 8-9 million VND and got 5 million VND of profit. Another rich farmer invested 5 million VND to buy fish net and he could earn 10 million VND during the flooding season. In general the rich can benefit from both in the dry and the flooding seasons.

The beneficiary groups in Block 8 can be divided into two groups: the paddy production group and the VACR group. The groups produce triple crop of paddy per year. Their first crop starts right after the inundation period. Depending on their farm location the farmers choose different paddy varieties. For the deep inundation area, they use the extremely short-life varieties, which take 83-85 days to be harvested. For the higher areas, they use longer-life paddy varieties.

For these groups, they need a dike system that can protect field in 10-15 days before harvesting so that their S-A paddy is ripe enough for harvesting in September. After harvesting they open the dike to get the water overflow into their field to get alluvium, to submerge the straw and the weeds, to reduce soil acidity

and to clean up their field. In November, they start seeding for the W-S crop, their main crop. These groups benefit the most from the flood as the farmers of Block 4 do. However, because the dike is not always good enough to protect their field from the flood, the flood sometimes destroys them. The current dike system's height is about the 1996 flood peak height.

The VACR groups are scattered in the communes. They often use the road as part of their concrete and close dike system. Their cropping patterns can be VR (garden and paddy field), VAC (garden, fish pond and husbandry), or VACR. R can be paddy production or upland crops. The groups can be found in My Trung hamlet-Bang Lang canal of Hau My Bac B commune and the three hamlets of Hau My Phu commune.

After harvesting the S-A crop they get the flood into their field and control the water level so that their internal small canals are filled but the roots of the trees are not damaged. The alluvium deposition thus is not much and their paddy yield is not as high as the yield of the paddy production groups. In compensation for the low yield, their income from fruits, upland crops and animals are high. According to the Party secretary and the PC staff of Hau My Phu commune, income of the VACR groups is at least 5 times higher than income of the paddy production groups. The W-S crop this year is a good harvest crop but the price of the paddy has decreased from 1,700 BVND to 1,350 VND within one month. Many paddy production farmers want to change their paddy field to VACR model. The area of VACR is only 2% of the area of paddy production but due to its high profit the dike to be improved by the project should take it into account. There is no official statistics on the number of paddy production farmers and VACR farmers but the two districts have planned to assign the North of the National Road No.1A to grow paddy mainly.

Based on income, since 1998 the province PC has classified those whose income is under 100,000VND/head/month the poor. This criterion is higher than the criterion set by MOLISA, which is 62,500 VND (2,500VND/kg of rice x 25kg). Compared to the average income of 230,000VND from the study, the poor standard income is rather low. The poor has no land or little land but many children and handicaps. Their livelihood depends on hired agricultural job thus they do not have job the whole year. In the flooding period they can go fishing but the fish resource is decreasing thus their life is more difficult.

The Poor Households in 1999 in Block 8

	Phu Nhuan	Thanh Loc	Hau My Bac B	Hau My Phu
Total Households	1,653	1,941	1,812	1,478
Poor Households (Percentage %)	146 (8.8%)	88 (4.5%)	235 (13.0%)	100 (6.8%)

Source: Commune Reports, 1999

#### (9) Beneficiary Needs

The needs of the people vary depending on their economic status. For the poor, indebtedness and income generation activities seem to be the most serious concerns. For the rich, the paddy production seems to be

the most important need. Problems tree analysis in Phong My commune reflects that the first priority need of the people is the completion of the dike system. Uncompleted dike system is the dike that is not strong and high enough to protect their paddy field from the August and October flood. The second needs are the improvement of the rural road network and the supply of production means such as credit, fish net, etc. Housing is the least priority need (see the table below).

**Ranking of the Problems Faced by Phong My Residents**

Problems Identified	Scores	Percentage (%)
Uncompleted dike system	67	83.8
Difficult transportation	63	78.8
Lack of production means	63	78.8
Loss of crops	60	75.0
Damage of houses	46	57.5

Source: Group Discussion in Phong My, March 2000

In Binh Thanh and Phuong Thinh communes, the residents pay attention to the marketing and the stability of paddy price the most, then the dike and rural road construction as shown in the table below. According to them, the government has to guarantee the paddy consumption as well as the paddy price if the government wants the farmers to continue to intensify their paddy production.

**Five Wishes of the Binh Thanh commune residents**

Priority Needs	Votes	Percentage (%)
Stability of paddy price and marketing	24	85.7
Dike and rural road construction	12	42.9
Capital for husbandry and agriculture production	12	42.9
Stability of price of production materials	12	42.9
Stability of family and society	9	32.1

Source: Group Discussion in Binh Thanh commune, March 2000

In Phu Cuong commune, as the area for double crop occupy 55% of the cultivated area, the residents' free time is long, the residents concern about having a job is the most. Difficult transportation is the second important concern and health and environment are the third important concerns as seen in the table below.

**Ranking of Problems Faced by the Phu Cuong commune residents**

Problems Identified	Scores	Percentage (%)
Lack of job	61.0	81.3
Difficult transportation	57.0	76.0
Poor health and environment	56.0	74.7
Difficulties in production activities	47.5	63.3
Poor children education facilities and recreation	46.0	61.3

Source: Group discussion in Phu Cuong commune, March 2000

In general, the people in the study area depend almost completely on the paddy production thus to have an improved dike system to protect their paddy from inundation is always their concern. Due to the current reality, hot issues can be the fall of paddy price or job creation. The service of improved irrigation and drainage system that might be proved by the projects is the most appreciated compared to other services.

The needs assessment meetings in Block 8 are done using method of problem tree analysis in Phu Nhuan and Hau My Phu. The needs of the beneficiaries are dike system, water supply, rural road network,



contracted production of paddy, credit for paddy storage until the price becomes higher and credit for production, health care for women and children. In Hau My Bac B and Thanh Loc the same problems. As the socioeconomic profiles of the four communes are similar, the rank of these problems can be appeared considered as the rank of problems of Block 8.

Need Ranking of Block 8

Needs	Priority Ranking	Notes
Construction of dike	1	The dike system that protect the whole commune residential and fruit tree gardens.
Contracted trade of agricultural output	2	
Water supply	3	From deep drilling well, from tab
Rural road network	4	
Credit	5	

Source: Workshops at the communes, 2000

Relating to the five services that might be provided by the project, the service of supplying of residential space on the dike system and planting trees along the small dike system seem to be not so important to the farmers because they have stayed along the dike system except some households who scatter in the field in temporary houses. Moreover, the residential space for each household is rather large thus what they need is credit to specialize their garden instead of space for planting. About the service of improved irrigation and drainage, as they have taken care of the service themselves or they might not understand the benefits of the project, none of the participants mentioned that service. The two services relevant to the farmers are to construct a complete dike system and rural road network.

#### (10) Beneficiary Demands

In both blocks, the farmers have contributed a lot of money and efforts to the improvement of the current dike and irrigation system as shown in the tables below. Every year they pay for the cost of heightening and maintain the dike. When the dike needs to be upgraded then it is the commune PC who is in charge of all the procedures to do that. The PC organizes meeting where the dike problem is discussed among the residents. If 70-80% of the residents agree with the dike improvement project proposal and sign the agreement then the PC will forward the proposal to the district DARD. The district DARD will conduct a technical study to estimate the cost and the design of the project. The residents will be gathered the second time to be informed and discussed the details and amount of money they will contribute to the project.

The amount of money the farmers pay depends on the amount of land they have and the requirement of the quality of the constructions. The larger their land is, the bigger amount of money they pay. In Phong My, for 0.1ha of land ownership the farmers pay 135,000 VND for the dike construction. In addition to that they also pay for the pavement of the rural roads. For one meter of rural road that run in front of their house, they pay from 10,000 VND to 13,000 VND. In Binh Thanh, the farmers contributed approximately 1 billion to construct their dike system in a year.

**Rural Development Activities in the Four Communes of Block 4**

	Phong My	Binh Thanh	Phu Cuong	Phuong Thinh
Length of Canal Dredged (m)	17,882	--	11,000	9,600
Amount of Soil Dug (m3)	122,109	95,447	65,000	n. a.
Rural Development Fund collected (1,000 VND)	82,091	135,995	21,738	77,563
Irrigation Fee Collected (VND)	n. a.	76,303	n. a.	n. a.

Source: Commune Report, 1999

**Rural development Activities in the Four Communes of Block 8**

	Phu Nhuan	Thanh Loc	Hau My Bac B	Hau My Phu
Length of Canal (m)	3,247	10,218	<b>Irrigation system: 8,600</b> Road: 7,100	--
Amount of Soil Dug (m3)	24,775	34,250	Irrigation system: 9,632 Road: 43,600	Road pavement and bridge: 10,000
Cost (VND)	128,793,000	82,971,000 (and 7,206 working days)	<b>Irrigation system: 3,852 working days</b> Road: 174,000,000 VND	Road pavement and bridge: 450,000,000
Note	Shared by the government (70,424,999VND, 55% of the total)	Farmers contribute 100% working days and 40% of machinery cost.	People pay 100% for irrigation system Government pay 60% and people pay 40% for road	People pay 252,000,000 VND (56% of the total), government pay 198,000,000VND (44% of the total)

Source: Commune Report, 1999

In Block 4, the government subsidizes the dike system projects by reducing the price of one m<sup>2</sup> of soil dug from the river or canal and heaped on the dike from 4,000 VND (market price) to 2,300 VND. Although the farmers have paid a lot but the dike is not strong enough to protect their field from the flood. When the flood comes they often cut the dike to get water in or the force of the flood itself will break the dike. The need for a dike system that protects them from the August flood still remains there because the farmers cannot afford the dike improvement at once and the support from the government is not sufficient.

#### (11) Absorptive Capacity

In Block 4, among the services that might be provided by the project, the improvement of the irrigation and drainage system and rural road network meet their requirement more than inundation mitigation, supply of residential space on dike system and plantation of trees along the small dike system. In fact, to be more precisely what they need in relation to the project activities is the irrigation and drainage system so that they can guarantee two crops, rather than to mitigate inundation because with a good irrigation and drainage system it is obvious that the inundation will be controlled.

At the present condition most of the households can cope well with the inundation and most of the communes' dike can protect the paddy fields from the August flood. Farmers have applied many new methods of paddy production to escape from flood. Farmers seem to be reluctant to practice the triple

paddy cropping. They say it will bring degradation of soil fertility and increase farm input, thereby, decrease profit and resultant lower price of land. This perception about triple paddy cropping is generally recognized for all the study area. This might be a shared idea being broadcasted in a radio program, which reports recent problems induced by introduction of triple paddy cropping.

Supplying of residential space on dike system seems to be the least important need of the residents in the communes as the residents are relatively new comers to the areas where social status is not based on their house appearance. They often say that house is not as important as food to eat. Moreover, to cope with the flood season every year, most of their house is already higher than the expected water level. They already concentrate on the main dike where other facilities such as schools, medical station or market are located. Furthermore, the residential space on the dike is not appropriate because the local style of house requires a lot of area for one house. Therefore, the dike surface could be occupied more than expected and there would be no space for transportation anymore.

Plantation of trees along the small dike system on the field side seems not appropriately be designed. Fruit trees cannot survive under the rotational inundation control system, as they need a perfect and complete inundation control. Trees to prevent wave should not be planted on the small dike close to the field but on the dike bank close to the river, as they will occupy the space needed for photosynthesis that facilities paddy production. Plantation of trees on the dike might damage the dike if the trees give high profit to the farmers because they will use the dike surface to plant tree thus destroy the surface of the dike.

To construct a dike system that can protect firstly two paddy crops from inundation per year and an improved rural road network would be highly appreciated by the majority of the residents.

For the cropping pattern, farmers in Block 8 need the dike to protect the August flood so that they can harvest the S-A crop within 10 to 15 days. After that they will use the flood to get alluvium, to submerge straw and weed to get organic fertilizer, to stop soil acidification. In October, when the flood withdraws they will pump the water out of their field to prepare for the W-S crop.

It is very difficult for farmers in Block 8 to accept RICS proposed because they have already practices triple cropping. Farmers in Block 8 also expressed their concern about natural environmental problems such as rats, ASS, etc. Although they have not accepted the RICS they appreciate the construction of small dike, irrigation system and rural road network because their existing dike system is not strong enough to protect their field from the October flood.

Similar to the paddy production groups, the VACR groups need concrete dike system to avoid the October flood as well as a good irrigation and drainage system to protect their garden, upland crops and residential space. However, it seems difficult to judge whether RICS applicable to this group at the moment. The

poor of the two blocks can be provided with more jobs as the third crop will be promoted by the project, while they feel that their income will be reduced because the fish source will be reduced.

The water management of the communes is different from one to another and there is no specific rule or regulation concerning this matter. In Phong My the PC pays the maintenance and operation fee for the water pump station. The management of the dike is assigned to the head of the irrigation group of the hamlet. In Binh Thanh the collectives sign contract with some members to take care of the irrigation system and other members to monitor the operation. Material used and fees are discussed and fixed to the reality of each area. The contract duration is one year and can be renewed if the contractors have done their work well. In Phu Cuong, water management is privatized and farmers pay 6.5 liter of petrol and 19kg of paddy for one hectare of paddy field per crop (the price of one liter of petrol is 3,650 VND). In Phuong Thinh almost all the farmers have their own water pumps. For renting they pay 30,000 VND to water one acre of paddy. If the rotational inundation control system works, there should be discussions on the management and operation rules to reach consensus beforehand to avoid conflicts.

Farmers who use the water system for their own benefit but disregard others' benefit may cause conflicts that need to be solved firstly at the hamlet level. The conciliation group of the hamlet consists of the Communist Party's secretariat of the hamlet, the head of the hamlet and all the representatives of the mass organizations at the hamlet level. To solve the conflicts, the representatives of the mass organizations to which both sides of the conflict belong will be invited to the conciliation meeting. If the hamlet conciliation group cannot solve the conflict then the task will be forwarded to the commune justice to solve and if the commune justice cannot solve, then the conflict will be forwarded to the district court. In the rural areas, the number of conflicts relating to land occupies the majority as the borders between lands so far are not clear and not precise. Sometimes the border is a tree, sometimes the border is a small canal that can change and disappear overtime. As the population is increasing and the land price is getting higher now the borders become hot spot for conflicts.

At the commune level, the PC staff has been trained on administration and politics and law but very few of them have been trained on dike or irrigation construction and management. For the construction of the dikes they have to rely on the technicians at the district and province DARD. However, the PCs as well as the local organizations and their members have not enough experiences that can be used to promote the rotational inundation control system. To effectively maintain and operate the system, training of staff on techniques of management of the system must be considered. In addition to that, training on community development approaches should be organized beforehand for the staff so that when the project starts they can apply them.

#### (12) Potential Adverse Impacts

Farmers whose small pieces of land are located along the dike would be affected by the project the most

because their land will be partially lost due to the enlargement of the dike system. To compensate the loss of their land there are two suggestions: 1) to pay them with the market price of land so that they can have capital to start a new income generation activity; or 2) to give them another piece of land so that they can continue their paddy production. Training on off-farm activities such as handicraft, mechanics, food processing, electronics, tailoring could be useful for them.

In both blocks, triple-crop paddy production farmers as well as large-scale farmers will benefit the most by the project as their double crop are guaranteed by the irrigation and drainage system. Moreover, the project will facilitate a third crop, which might be a paddy or an upland crop. However, the large-scale farmers could become a disadvantaged group if adverse impacts of the project are not appropriate mitigated. The farmers express their concern about degradation of soil fertility, loss of fishing opportunity, field cleansing, increasing of rat population and water pollution. It is strongly recommend that the validity of their concerns should firstly be explored scientifically and, if it is verified, appropriate mitigation measures should be proposed and incorporated in the project.

Another potential adverse impact is the shortage of labor in the seedling and harvesting periods. At the moment manpower is the main labor force especially for the harvesting tasks. The local labor together with the seasonal immigrants from Ben Tre and other provinces take care of the harvesting. However, due to low paddy price that leads to low wages the immigrants and the local workers lose incentives to work thus causing a severe shortage in labor force. As a result, the farmers have to pay increased wage to harvest their field. This problem will be more serious when the whole area participated in the RICS and their activities are strictly carried out as scheduled.

Hired labors of landless labors are also affected by the project as their income depends totally on nature. In the dry season, which last for six months, they can earn their living by working as hired labor for the well-off farmers. In the rainy season, which includes three to four months of inundation, their income depends on the quantity of the water coming every year. The higher the water level is the higher income they get as the wild fish and shrimp come with the flood. It is said that before the dike was constructed and the double crop are promoted, for one flooding season one family could earn 3,000,000-4,500,000 VND by fishing in Block 4 and 2-3 million VND in Block 8.

People's Concerns in the Dry Period of the RICS

Item	Rats increase	Fish decrease	Soil fertility decrease	Weeds increase	Soil acidity increase
Percentage (%)	51	26	17	5	1

Source: Social Environmental Impact Study, 2000

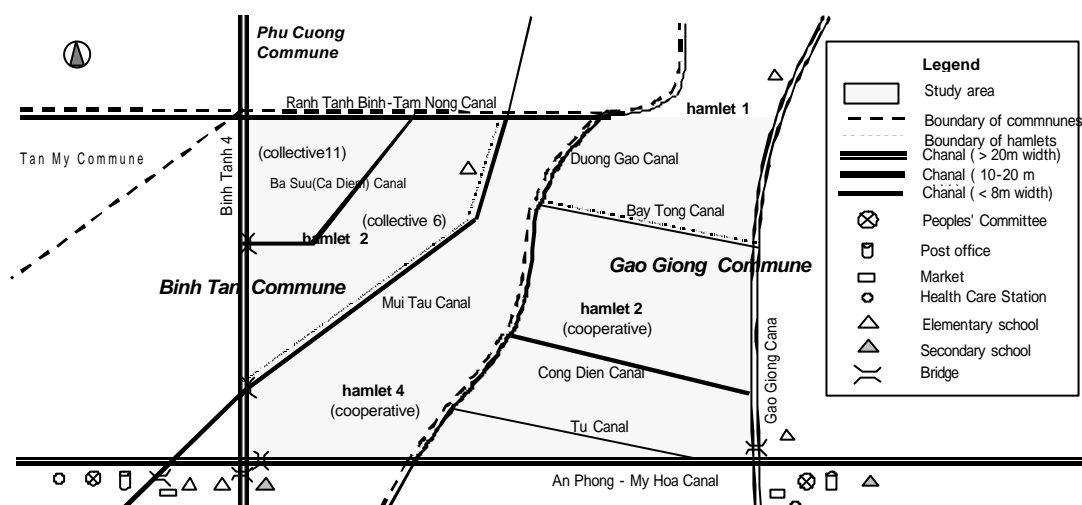
### **M.3.3 Wrap-up Workshop of the Social Survey**

In each block, Wrap-up Workshop was held to complete the social survey in Pre-F/S Area (Thanh Binh

District of Dong Thap province, 21 April and Cai Lay District of Tien Giang province, 24 April).

### M.3.4 Procedure of the Survey in F/S Area

The western part of F/S Area, approximately 953 ha, is under Binh Tan commune, Thanh Binh district while the eastern part, approximately 828 ha, belongs to Gao Giong commune, Cao Lanh district. Information of the area was mainly obtained from the preliminary rural appraisal. Overview of the area is illustrated below:



### Methodology of the Survey

The survey schedule is summarized below. The study lasted more than 6 weeks, from the beginning of March to the end of April, 2000. After one-day public hearing, 4 days for preparation and one-day field trip, the study took four steps consisted; 1) preliminary rural appraisal, 2) examination of project draft design, 3) consensus building assessment, and 4) finalization of the project design.

	March	April	May
0) Preparation	■		
1) preliminary rural appraisal	■■■■■■■■■■		
2) examination of project draft design		■■■■■■■■■■	
3) consensus building assessment		■■■■■■■■■■	
4) finalization of the project design			■
5) Data Processing/Reporting			■■■■

### Survey Team

The survey was carried out by the local survey team consisted of one team leader, one assistant team leader, and 4 survey assistants. The team leader, with degree of sociology and social work, has rich experience of working for community development programs handled by international NGOs and donor agencies as consultant or program officer. The assistant team leader also has educational background of

sociology. With regard to survey assistants, one is the official of Thanh Binh district DARD in charge of Binh Tan commune, the other is the official of Cao Lanh district DARD in charge of Gao Giong commune, and the last is the official of Cai Lay district People's Committee (PC), Tien Giang province. During the preliminary survey in 2 communes, two more members from each commune were added; one is a leader of Farmer's Union, the other is a leader of Women's Union.

### **Activities of the Survey**

#### **(i) Preliminary rural appraisal**

Purposes of this appraisal were as follows.

- To give the survey team clear understanding of the local community, so as to help the team to work smoothly on the next project designing and consensus building stage
- To make the local people recognize and accept the study team
- To facilitate the local people to understand themselves more clearly and objectively by the workshop and interview which give them a picture of their implicit and embedded local knowledge and information.
- To encourage the local people's participation in this survey
- To identify persons to be representatives of local community for the stakeholder meetings and technical working group in the next survey steps

The components of the preliminary rural appraisal were 1) key informant interviews, 2) farm household questionnaire survey, 3) participatory group discussion, and 4) selection of the stakeholder meeting participants.

#### **1) Key informant interviews**

Semi-structured interview based on the checklist was carried out to get the overview of the community.

#### **2) Mapping**

Geographic information such as settlement pattern, farmland distribution and tenure, canals and other infrastructures were very essential to think of project design. Moreover, through the key informant interviews, the fact was revealed that there was considerable number of households holding farmland in the survey area but living outside the survey area. Therefore, households were classified into 3 groups; holding farmland and house in the survey area, holding farmland in the survey area but house outside the area, and holding house but no farmland in the survey area. The only local leaders and officials, who know the area as a whole, could draw the area map containing necessary information as such.

#### **3) Farm household questionnaire survey**

Farm household interview was conducted according to the questionnaire. 50 households were chosen as samples. Sample distribution was shown below.

Sample size and distribution

( Binh Tan )

Hamlet No.	Cooperative/Collective	No. of households
Hamlet 2	Collective 6	7
	Collective 11	8
Hamlet 4	Binh Minh Cooperative	12
Total		27

( Gao Giong )

Hamlet No.	Cooperative/Collective	No. of households
Hamlet 1		19
Hamlet 2	Gao Giong Cooperative	4
Total		23

The information on farming and other daily livelihood, and access to social infrastructure was mainly gathered.

4) Participatory workshop

Two thematic workshops were carried out with attendance of local people. In the one workshop, male and female farmers together discussed yearly agricultural activities and pictured cropping calendar. In other workshop, daily activities and advantages and disadvantages of inundation were discussion topics. Participants, who were first divided into male, female and children groups, discussed separately, then, the results of each group discussion were compared.

5) Selection of stakeholder meeting participants

“Stakeholder” is defined as any individual, group and organization that have some relation to the project. The survey team selected 56 persons to invite to the stakeholder meeting. They would be supposed to attend all stakeholder meetings planned in this survey as representatives of stakeholders. They included commune PC and Communist Party’s officials, leaders of existing local groups, leaders of hamlets, ordinary farmers, officials of DARD at district and province level.

Number and distribution of the stakeholder meeting participants

Jurisdiction		Organization/Position	Number
Dong Thap	Province	DARD	7 (1)
Cao Lanh	District	Communist party	1
		DARD	2 (0 or 1*)
		PC	1
	Gao Giong commune	Communist party	1
		PC	2
		Local leader**	6 (2)
		Farmer	9 (3)
Thanh Binh	District	Communist party	1
		DARD	2
		PC	2 (1***)
	Binh Tan commune	Communist party	1



Jurisdiction		Organization/Position	Number
		PC	2
		Local leader****	8 (1)
		Farmer	12 (5)
<b>Total</b>			<b>56 (13 or 14)</b>

\* In case director (female) cannot attend, the number in ( ) changes because vice-director (male) replaces her.

\*\* In Gao Giong, they are the leaders of farmer union, women union, cooperative / collective and hamlet, and cooperative's accountant.

\*\*\* Chief secretary of Thanh Binh district PC was added at the stakeholder meeting (3) because she was assigned to arrange the meeting.

\*\*\*\* In Binh Tan, they are vice-leader of farmer union, vice-leader of women union, leader and accountant of cooperative, and leader and accountants of collectives.

#### (ii) Examination of project draft design

Examination of project draft design had three successive activities; stakeholder meeting (1), work of Technical Working Group, and stakeholder meeting (2).

#### 1) Stakeholder meeting (1)

The purposes of the stakeholder meeting (1) (SHM (1)) were,

- To notify concerned local people of the project proposed by JICA study mission,
- To listen to the initial opinions of local people about the proposed project, and
- To choose the members of the Technical Working Group.

SHM (1) was held with 52 participants on 29 March 2000. In order to discuss negative and positive impacts of the project, the participants were divided into five groups: 1) local government officials, 2) local engineers, 3) local leaders, 4) male farmers, and 5) female farmers. Each group consisted of 10~12 people with similar position in their society so as to make them feel comfortable to exchange opinions. Participants discussed and summarized opinions on the cards, then one representative of each group presented the results of their group discussion. Following summary explains first responses from stakeholders to the project.

#### **(GROUP 1: Local Government Officials)**

##### I. ADVANTAGES OF THE PROJECT

- Agricultural production is secured thanks to water control.
- Increase of production results to increase of household income.
- Life becomes safe and improved.
- Road transportation becomes easier.
- Protecting houses and properties during flood season

##### II. DISADVANTAGES OF THE PROJECT

- Decrease of fish and other river products
- Decline of alluvium coming into the fields
- Increase of diseases and rats
- Chemical pesticide and insecticide cause environment pollution.
- Limitation of boat transportation of internal – external canals

**(GROUP 2: Engineers and technicians)**

**ADVANTAGES OF THE PROJECT**

- Increase of yield, mainly because of triple cropping, improves living standard.
- Development of transportation road network induces rural development.
- Children can go to the school even during flood period.
- Residential area is not inundated.
- Farmers' organization is strengthened.

**DISADVANTAGES OF THE PROJECT**

- Some cultivation area may be lost due to improvement of dike system.
- Acid sulfate soil may be released during the 3<sup>rd</sup> crop
- Rats, insects and diseases will increase.
- Production cost for the 3<sup>rd</sup> crop is high, so the profit is low.
- Soil fertility and paddy yield will decrease because alluvium gradually decreases.
- Pumping water for rotational inundation costs high.
- Internal boat transportation may be limited during the 3<sup>rd</sup> crop.
- Cultivation practice of farmers will be changed
- If applied at a large scale, the project will affect on the flood condition for the whole region.

**(GROUP 3: Local Leaders)**

**I      ADVANTAGES OF THE PROJECT**

- Triple cropping for every 3 years increases farmers' income.
- Triple cropping creates more job opportunities for the inhabitants in the area.
- Residential area is not inundated during flood season
- Living and transportation is more easy during flood season
- Rotational inundation lets alluvium come into the field, so soil will not be degraded for long term.

**II     DISADVANTAGES OF THE PROJECT**

- Limitation of fish and other river products
- Increase of rats
- Moving houses to other place is very costly
- Farm households, which have land in the middle of dike unit, will face difficulty to transport their agricultural goods and materials.

- Canal water will be polluted due to dike system, so it affects on health of inhabitants.

**(GROUP 4: MALE FARMERS)**

I. ADVANTAGES OF THE PROJECT

- Increase of paddy production due to the 3<sup>rd</sup> paddy crop
- Paddy production is secured by flood control.
- Increase of alluvium amount
- Transportation becomes easy
- Increase of income improves living standard.
- Livestock, poultry are protected
- It is not necessary to move houses when flood comes.
- Increase of fish and other river products

II. DISADVANTAGES OF THE PROJECT

- Benefit from rich alluvium decreases.
- Rats increase.
- Pesticide residue and canal water stagnation result in environment pollution
- Population of fish decreases
- Loss of land due to improvement of dike
- Decrease of paddy yield because of triple cropping

**(GROUP 5: FEMALE FARMERS)**

I. ADVANTAGES OF THE PROJECT

- Transportation becomes easy.
- Production of Summer-Autumn crop is secured.
- Income increases thanks to the 3<sup>rd</sup> crop.
- Plantation of vegetables and fruit tree is possible so that nutrition intake for the family is improved.
- It is possible to utilize space to dry harvested rice

II. DISADVANTAGES OF THE PROJECT

- House removal is costly.
- Water transportation become difficult.
- Loss of cultivation land
- Benefit of alluvium to the paddy field decreases.

Main concerns of the participants are agricultural production and transportation. They appreciate benefit of triple cropping but question whether the profit and yield from the third crop is enough. Similarly, they approve that dike improvement secure road transportation throughout the year but worry that water transportation is limited. They also understand it as an advantage that improved dike protects Summer-

Autumn crop from inundation. However, they are afraid of land loss, increase of rats, decline of fish and other river products, pollution of canal water, and impact on alluvium and acid sulfate soil.

Some questions related to project, project components, and counter-measures against the negative impacts were also raised. These issues should be discussed more in detail in the work of Technical Working Group (TWG), however, answers or possible solution should be waited until the next stakeholder meeting. At the end of the meeting, members of TWG were selected.

The role of the survey team in SHM (1) was to organize meeting with cooperation of province DARD that provided meeting room and necessary facilities. The members worked as master of ceremony, and as facilitators in group discussion and TWG member selection.

## 2) Work of Technical Working Group

TWG aimed at achieving following objectives through examining the proposed project further in detail and formulating the project draft design on behalf of stakeholders.

- To make the project feasible
- To make the project to meet the local needs
- To develop the sense of ownership and responsibility for the project among local people and authorities

Before the stakeholder meeting (1), the survey team listed up several candidates who were supposed to be capable of pursuing TWG's tasks. They were PC officials in charge of agricultural development, leaders of farmers' union and women's union, and cooperative's leaders from both Binh Tan and Gao Going. In addition, two survey team members, one of who came from Cao Lanh district DARD, and the other from Thanh Binh district DARD, were to be involved in the TWG. At the meeting, the survey team asked the participants whether the candidates were acceptable, and to select some more persons by themselves. As a result, 16 persons were selected with a consensus

TWG members gathered and worked 4 times between April 3 and 10, 2000 to examine the following issues. At the last session on April 10, they prepared materials that would be used for explaining the project draft design to the participants at the stakeholder meeting (2).

### Working plan and discussion issues for project draft design

Session 1 (April 3)	<p><b>MITIGATING NEGATIVE IMPACTS</b></p> <ul style="list-style-type: none"> <li>➤ Negative impacts discussed in the Stakeholder Meeting (1)                             <ul style="list-style-type: none"> <li>✓ How can the negative impacts caused by the project be mitigated?</li> </ul> </li> <li>➤ Land loss and temporal removal of houses by the dike improvement                             <ul style="list-style-type: none"> <li>✓ What kind of compensation is appropriate?</li> <li>✓ How do local residents bear the compensation cost?</li> </ul> </li> </ul>
Session 2	<b>INTRODUCTION OF ROTATIONAL INUNDATION SYSTEM</b>

<p>(April 5)</p>	<ul style="list-style-type: none"> <li>➤ Shape of dike unit (Division of dike unit) <ul style="list-style-type: none"> <li>✓ Do local residents agree with the division of dike unit? (Especially for the dike unit of the Gao Giong Commune from the aspect of boat transportation.)</li> </ul> </li> <li>➤ Rotational inundation system <ul style="list-style-type: none"> <li>✓ Do local residents agree with the suggested rotational inundation system?</li> <li>✓ How to set up rotation unit?</li> <li>✓ How to keep and manage rotational inundation among the units? What kind of rule and regulation should be applied?</li> </ul> </li> </ul> <p style="text-align: center;"><b>FARMING PRACTICE</b></p> <ul style="list-style-type: none"> <li>➤ Restriction of boat transportation and installation of water gates <ul style="list-style-type: none"> <li>✓ Do farmers accept the situation they are forced to unload/load goods at the dike in some existing internal canal? (It means, entrance of some existing internal canal will be shut for boat transportation.)</li> </ul> </li> <li>➤ Installation of culverts for irrigation pumping and drainage <ul style="list-style-type: none"> <li>✓ Is the water management work using proposed structures (culvert and stop logs) acceptable for farmers?</li> <li>✓ Is any penalty necessary to prevent from cutting dike?</li> </ul> </li> </ul> <p style="text-align: center;"><b>DESIGNING FACILITIES</b></p> <ul style="list-style-type: none"> <li>➤ Discussion on required equipment/facilities related to dike improvement and their location <ul style="list-style-type: none"> <li>✓ Which equipment/facilities are required?</li> <li>✓ Where should those equipment/facilities installed? How about the priority among those?</li> </ul> </li> </ul> <p>(From the viewpoint not only of agricultural production but also needs of daily life)</p> <ul style="list-style-type: none"> <li>- Water gate                      - Culvert</li> <li>- Dike road and bridge       - Boat anchorage</li> <li>- Communal area</li> <li>- Others</li> </ul>
<p>Session 3  April 8</p>	<p style="text-align: center;"><b>CROPPING PATTERN</b></p> <ul style="list-style-type: none"> <li>➤ Suggested cropping pattern <ul style="list-style-type: none"> <li>✓ Is suggested cropping pattern acceptable for farmers?</li> <li>✓ If not, how to change it? What kind of alternatives can be proposed?</li> </ul> </li> </ul> <p style="text-align: center;"><b>OPERATION AND MAINTENANCE</b></p> <ul style="list-style-type: none"> <li>➤ Maintenance of dike and road <ul style="list-style-type: none"> <li>✓ Is it necessary to formulate new task group for dike maintenance? If so, how to organize new group?</li> <li>✓ If existing local group/organization is in charge of dike maintenance, which existing local group/organization should be in charge? How to strengthen that group?</li> <li>✓ How do local residents contribute to dike maintenance?</li> </ul> </li> <li>➤ Operation and maintenance of irrigation and drainage facilities <ul style="list-style-type: none"> <li>✓ Is it necessary to formulate new task group for Operation and maintenance of irrigation and drainage facilities? If so, how to organize new group?</li> <li>✓ If existing local group/organization is in charge of Operation and maintenance of irrigation and drainage facilities, which existing local group/organization should be in charge? How to strengthen that group?</li> <li>✓ How do farmers contribute to Operation and maintenance of irrigation and drainage facilities?</li> </ul> </li> </ul>
<p>Session 4  April 10</p>	<ul style="list-style-type: none"> <li>● Review of the session 1 ~ 3</li> <li>● Preparation of the stakeholder meeting(2)</li> </ul>

The working process and results were briefly summed up below.

**(Session 1)**

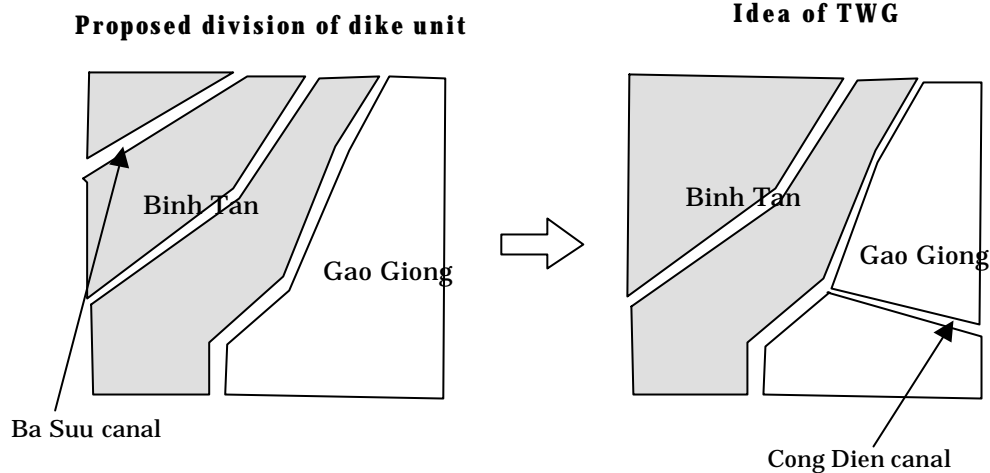
At the beginning of the session, members chose Mr. Son (Cao Lanh DARD official as well as survey team member) as leader of the TWG, and Mr. Hung (cooperative leader, Binh Tan) and Mr. Y (cooperative leader, Gao Giong) as co-leader. Mr. Son, since then, facilitated the sessions with support of the other survey team members.

Based on the stakeholder meeting, nine points were indicated as the predicted negative impacts of the project; 1) decrease of fish and other river products, 2) decline of the benefit from alluvium, 3) degradation of land by acid sulfate soil, 4) increase of rats and insects, 5) limitation of water transportation, 6) environmental pollution, 7) loss of land, 8) difficulty to pay for project cost, 9) high production cost for third crop, and 10) change of farming practice.

TWG considered 1), 2), 5), and 10) as not so serious problems. People from Binh Tan had much concern about the problem 3) because soil condition of Binh Tan is worse than Gao Giong. One member suggested counter-measure to protect paddy field from acidic water by digging small ditch along canal. Point 4) was also considered as big problem. As for 6), members thought that non-inundation would induce water pollution. Since chemical residue from fertilizer and insecticide and waste from households have been diluted or washed away by flood, they were afraid that contaminated water would be stagnated. The members suggested four points on 7) and 8) which were closely related each other. First, compensation for loss of land and other properties should be included in the project cost. Second, in order to cut down project cost, land loss and temporary house removal should be minimized. Third, compensation price should be market price. Last, the way of payment should be affordable for local residents. As point 9) concerned, TWG could not estimate cost and benefit clearly because it depends on market situation and natural condition.

**(Session 2)**

At this session, one JICA expert in charge of irrigation and drainage joined as technical advisor. First, division of dike unit was examined. Members from Gao Giong suggested dividing their side into two dike units by Cong Dien canal while those from Binh Tan proposed to combine upper two units in their side into one. In case of Gao Giong, there are many households along the Cong Dien canal so the members concerned water pollution and restriction of water transportation. In Binh Tan's case, on the other hand, members more worried about land loss since most of area along Ba Suu canal was farmland. At the end, they concluded that they should discuss with local people to make final decision.



Second issue was rotational inundation system. Although most of them seemed to have no objection to the system, Gao Giong's cooperative leader insisted on introducing alternative rotation such as "one year inundated and two year non-inundated" instead of "one year non-inundation and two year inundated". He seemed to want more benefit from triple cropping. However, JICA expert and the survey team leader explained rationale of "one year non-inundation and two year inundated" rotation and adverse effect caused by another option from the technical point of view, all of members clearly understood and agreed with the proposed system. Discussion on rule and regulation to manage the system was brought forward to session 3.

Next, location of required equipment and facilities was examined. The members marked the location of culverts, water gates and bridges on the area map which was drawn in the preliminary rural appraisal. They strongly suggested installing bridges for car. Even though outside roads connected to their area were not yet developed for car transportation, they seemed to want wider bridges for future. In this session, final decision was not made.

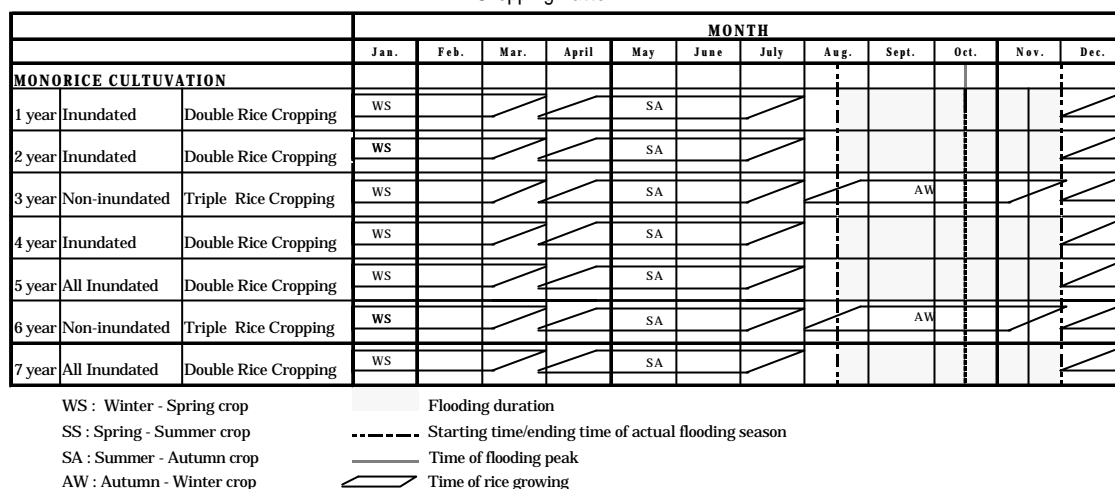
With regard to restriction of boat transportation and change of water management by culvert installation, the members did not discuss much but accepted.

### **(Session 3)**

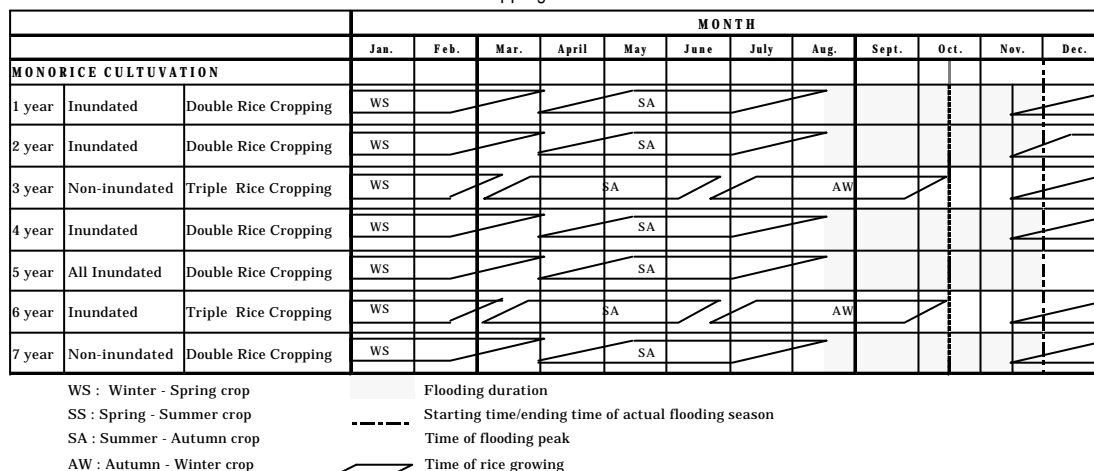
At this session, two JICA experts, one in charge of agriculture and the other in irrigation and drainage joined as technical advisors.

The new cropping pattern under the rotational inundation was already proposed in SHM (1). After SHM (1), however, JICA mission made second option based on further study. Since it was distributed at the end of session 2, this session started from scrutinizing of two cropping patterns.

Cropping Pattern 1



Cropping Pattern 2



In conclusion, TWG members accepted the second suggestion. Although the second one requires more intensive work for harvesting and next planting than now in order to finish Autumn-Winter crop in the middle of October, they prefer to inundate paddy field before Winter-Summer crop. The main reason was that inundation could clear weeds, rats and insects and revitalize paddy field. The members thought that they could manage intensification of farming activities.

Next, members from Gao Giong referred to the division of dike unit. They told that they would accept proposed dike division instead of their suggestion in session 2 in order to avoid land loss and house removal.

Then, they proceeded to the issue on operation and maintenance. They proposed to establish board of management. They supposed that the board should include not only local officials but also representatives of residents and that supervision and technical support from district and province DARD and district PC



would be necessary as well. Some member also suggested establishing the group to manage irrigation and drainage in each dike unit.

At the end, JICA expert raised the issue on water pollution. That problem has not been discussed in detail even though they decided to unify dike units and to introduce water gates instead of dividing dike. In the survey area, people totally depend on canal water for drinking, cooking, washing, and bathing. Rainwater is hardly available even in rainy season. JICA expert explained that canal water would be possibly polluted during flood period in non-inundated year because water gates should be shut to prevent water from entering into the area. However, this problem would be solved if water flow is activated. TWG members answered that pumping water in and out was common practice of farming activities so they could do the same in flood period to reduce water contamination. In flood season, moreover, rain will dilute canal water and residents have to drain water anyway, so they concluded that they could mitigate water pollution.

#### **(Session 4)**

TWG used the last session to make conclusion and to prepare for the stakeholder meeting (2). The survey team suggested dividing members into four groups and selecting one representative to present at SHM (2). The team intended to give more members an opportunity to play an active role in the survey process. After TWG members were grouped, they summarized the results of their working session according to each issue, which was the first project draft design. Experience of SHM (1) taught that typed paper material with many pages for every participant was not so appropriate especially for local people. Since they do not get used to read papers, they could not keep concentration for long time. This time, therefore, all information was written on large pieces of paper by markers to display at SHM (2).

#### 3) Stakeholder meeting (2)

The purpose of the stakeholder meeting (2) (SHM (2)) was to show the stakeholders the first project draft design made by TWG and to get their primary approval. The meeting was held on 13 April 2000. Only 24 participants, 4 officials attended from province and district level and 20 from the survey area, attended this time. Although it was impossible to guess the reason why many officials were absent, that of local people's absence was obvious. In the meeting TWG explained its first project draft design, then, participants asked questions and exchanged ideas.

In conclusion, focal point of the discussion was the issue of residential area. This issue was not discussed in detail in TWG sessions. After TWG explained the first project draft design, it was recognized that TWG thought that their residential area would be totally protected from inundation. Participants of the meeting, especially province and district officials, also considered the same. Actually however, it was misunderstanding because the area would be inundated two years for every three years as same as now. Local government officials strongly insisted that residential area development should be included in the

project, otherwise the project should not be acceptable. However, some commune PC officials and local people suggested that they could apply for another government program to upraise their land and house. At the end, the survey team and TWG concluded that they would inform this issue to the local residents and let them decide in public hearing and hamlet discussion.

#### 4) Implication from the examination of project draft design

It was revealed that land loss was the most significant concern among local people. Actually, it was difficult for both the survey team and TWG to understand the concept of rotational inundation system. However, once understood, it was not so difficult for local people to imagine that complete protection against inundation causes adverse impact to outside area. They were convinced that rotational inundation was essential not to worsen flood situation outside the project area.

In the TWG, at the beginning, only 5 ~ 6 limited persons raised their voice. More they involved their work, however, more they actively participated in TWG session as well as stakeholder meeting (2). Area map drawn in preliminary rural appraisal was quite useful in the TWG sessions.

#### (iii) Assessment of Consensus Building

The purposes of this assessment were as follows.

- To make sure to what extent the public understand and agree to the project
- To pick up public opinions, which have not ever expressed in stakeholder meetings and Technical WG, in order to improve the project design

This stage included four components such as 1) Public hearing, 2) Hamlet discussion, 3) Opinion box setting, and 4) Consensus building assessment survey.

After SHM (2), JICA experts and the survey team prepared material to explain why it was difficult to include residential area construction as project component. It was urgently needed to correct misunderstanding among stakeholders in forthcoming public hearing. Material also explains how the houses will be in inundated year.

#### Consideration of residential area

##### **(What are the difficulties to prepare residential area?)**

The residential area improvement is not included to the dike improvement project because of the expected serious disadvantages. However, the public space or communal area improvement for school, health care center or other public facilities might be included to the project. As a result, the 2/3 of the total area in each year, which is recognized as "rotational inundated area", will suffers from inundation as same as present. Houses in the remaining 1/3 area, "rotational non-inundated area", will be protected from flood due to the dike effect.

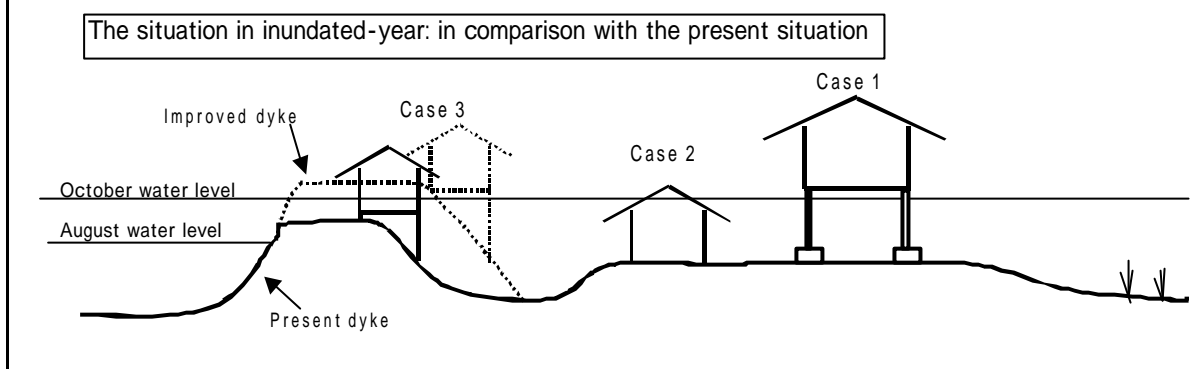
The expected disadvantages of the residential area improvement are;

- A large land loss of paddy field due to the construction of protected residential areas occurs. (especially at the area along small dike)

- A lot of houses are to be removed temporarily and permanently. It will burden to farmers a large effort for house removal and reconstruction. And also, many families have to move their houses from the place they lived before, because the improved residential area will be concentrated to reduce the project cost and land loss. That requires re-arrangement of registration of house land.
- Project cost will become high, and the burden of farmers will become high as a result.
- Unfairness will occurs in the cost burden and land loss. For example, between people living in the dike unit but not having cultivating in the dike unit, and people cultivating in the dike unit but not living in the dike unit.
- Unfairness will occurs in "who will live in the safe area". Actually, it is impossible to prepare improved residential area for all households living in the dike unit due to the cost and land loss. It means some families can live on the safe area and some others cannot live there even in a same dike unit.
- In addition, the idea to control water level inside dike as to protect residential area is not acceptable because of the expected negative impact or adverse effect to the external area.

**(How about the situation inside the dike in inundated year?)**

Following figure illustrates the situation.



**1) Public hearing**

The public hearing aimed at disclosing the project draft design to local residents in the area. TWG organized public hearings at 16 places in total from 14 to 19 April 2000. All of them were held in individual houses except one at primary school in Binh Tan. Participants amounted to 478 persons (358 male and 120 female). TWG members explained the project draft design in the hearings. Assuming one household sent one person to the hearing because the survey team asked TWG to organize such a way, about one third of total household was covered by these public hearings.

Schedule and participants of public hearing

Commune	Hamlet (Cooperative/Collective)	Date	Name of house owner	No. of participants		
				Male	Female	Total
Binh Tan	Hamlet 4 (Cooperative)	04/14	Mr. Hung	21	9	30
		04/15	Mr. Sanh	22	8	30
		04/15	Mrs. Lanh	24	7	31
		04/16	Primary school	21	9	31
		04/16	Mr. Tri	23	7	30
	Hamlet 2 (Collective 11)	04/19	Mr. Nuoc	24	6	30
	Hamlet 2 (Collective 6)	04/18	Mr. Ba Gon	28	6	34
		04/18	Mr. Hai Nhon	36	2	38
		04/19	Mr. Tu Trieu	30	4	34
	Sub-total in Binh Tan				229	58
Gao Giong	Hamlet 2 (Cooperative)	04/15	Mr. An	23	3	26

**THE STUDY ON INTEGRATED AGRICULTURAL DEVELOPMENT PLAN  
IN THE DONG THAP MUOI AREA VIET NAM DRAFT FINAL REPORT**

		04/15	Mr. Ba Bon	33	5	38
		04/17	Mr. Sau Thanh	9	17	26
		04/17	Mr. Ut Vo	17	3	20
		04/17	Mr. Tu Dong	15	5	20
	Hamlet 1	04/15	Mrs. Co Tu	13	10	23
		04/17	Mr. Nam Vo	19	19	38
	Sub-total in Gao Giong			129	62	191
Grand total				358	120	478

## 2) Hamlet discussion

After local residents got information on the project, hamlet discussion was organized in the same manner as the public hearing. The purpose of this hamlet discussion was to give an opportunity for local residents to exchange opinions among them. TWG and the survey team arranged the meeting places, prepared the project description, then, at the meeting, played a role as facilitator, answered the question from the participants. Three meetings were set only for women. In this locality, women tend to hesitate to speak out with the presence of men, so it was more comfortable for women to talk among themselves.

Hamlet discussion also helped to correct people's misunderstanding of the information. Actually, for example, some people had believed that Japanese company would invest in the area, or the project would prepare new residential area so people have to remove the houses, and so on. It was recognized that information was sometimes transferred with distortion from persons to persons. In the discussion, therefore, TWG and the survey team members again clarified the points of the project in order to make local residents understood. Meetings were held at 10 different places with 222 participants in total. Since 3 meetings were organized exclusively for women, balance between male and female participants resulted almost equal.

Schedule and participants of hamlet discussion

Commune	Hamlet (Cooperative/Collective)	Date	Name of house owner	No. of participants		
				Male	Female	Total
Binh Tan	Hamlet 4 (Cooperative)	04/20	Ms. Phung	-	16*	16
		04/20	Mr. Hung	14	4	18
		04/20	Mrs. Lanh	24	7	31
	Hamlet 2 (Collective 11)	04/21	Mr. Nuoc	15	5	20
	Hamlet 2 (Collective 6)	04/21	Mr. Ba Gon	13	7	20
		04/21	Mr. Hai Nhon	20	4	24
Sub-total in Binh Tan				86	43	129
Gao Giong	Hamlet 2 (Cooperative)	04/21	Mr. Ba Bon	-	28*	28
		04/21	Mr. Tu Le	-	25*	25
		04/21	Mr. Bay Muot	16	4	20
	Hamlet 1	04/22	Mr. Nam Vo	13	7	20
	Sub-total in Gao Giong				29	64
Grand total				115	107	222

\* Meeting only for female.

After the hamlet discussion, TWG had extra-session to prepare for the last stakeholder meeting. This session was not planned initially, but most of the TWG members gathered voluntarily and the survey team helped their work. They sorted and summarized the local residents' opinions raised in hamlet discussion

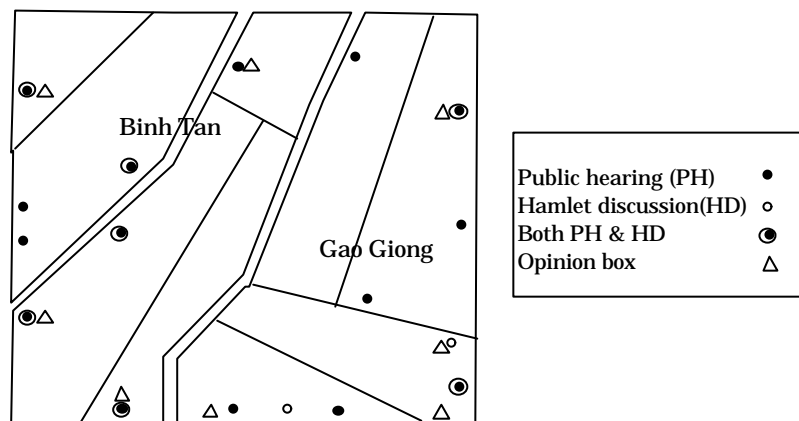
and finalized the project draft design.

### 3) Opinion box setting

Eight opinion boxes were set up in the area to enable local residents to write and cast their opinions on the project anonymously. The study team and Vietnamese counterparts checked the boxes periodically. After this study completed, the boxes were remained until the JICA study mission completes the whole work in order to keep monitoring people's opinions.

Following figure overviews the location of houses where public hearing and hamlet discussion were organized and opinion boxes were set. It clearly shows that these activities were carried out at many different places so as to enable more number of local residents to come and attend at their nearest place.

**Places of public hearing, hamlet discussion, and opinion box**



### 4) Consensus building assessment survey

The assessment aimed at evaluating whether the local residents understood and agreed with the project or not. The survey covered all households, about 1300, in the area. The JICA expert and the survey team designed the questionnaire. It asked respondent, first, whether he/she has heard of the project, second, how he/she understood the project, and at last, whether he/she can accept the project or not. In the last question, 5 possible options were prepared to distinguish what extent he/she agreed or disagreed the project. It made possible to know what point of the project he/she appreciated or disapproved.

Hamlet leaders in the area took responsibility to distribute and collect the questionnaire sheets. Collection of sheets and data processing are still ongoing.

### 5) Implication from the consensus building assessment

In this stage, TWG played more important role than the survey team. Hamlet discussion revealed that there was significant gap between perception of local residents and government officials. Although government officials insisted on residential area development, local residents concluded that it was not

necessary, or even they do not want. Development of new residential area requires large space and removal of the houses. It means that some local residents have to give up some part or all of their land, and they have to move their present living place to the other. They are reluctant to lose land and to move their house far away from their paddy field that is located now very near to their houses. In addition, they do not increase the project cost. Therefore, they do not have much interest in having bridge for car either, since car is not available in their daily life.

#### **(iv) Finalization of the Project Design**

##### **1) Stakeholder meeting (3)**

The third stakeholder meeting (SHM (3)) was held on 25 April 2000. There were 30 participants: 9 of province and district officials and 21 from the survey area. The purpose of SHM (3) was to assess the project draft design, where the result of SHM (2) and hamlet discussion were carefully considered by TWG, so that stakeholders would reach consensus on the project as a whole. Finalized project design is shown below;

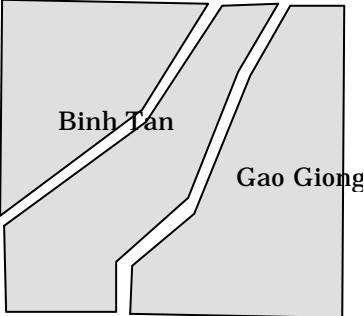
The draft design of the project " Improvement of Small Scale Dike System "  
( presented at the 3<sup>rd</sup> Stakeholder meeting on 25 April 2000 in Thanh Binh dist. PC )

**Foreword**  
This draft design of the project has been finished by the TWG. It is basically based on the first draft design presented at the 2<sup>nd</sup> Stakeholder meeting taken place in Cao Lanh district PC on 13 April 2000 and also the comments throughout the group discussions of 222 representatives of local farmers living in the project area.

**Terms of the draft design**

**1. Dike unit in the project area :**

The whole 1.800 ha of the project area will be divided into 3 dike units of which 2 units are in Binh Tan commune and 1 unit is in Gao Giong commune. (See picture illustrated )



**2. Rotational inundation control system :**

Each dike unit must be applied the rotation as suggested in the project " 1 non-inundated, 2 inundated ". It means that the inhabitants in each dike unit will be able to do one more crop (the 3<sup>rd</sup> crop ) once every three years ; and the two other years local farmers can do double crop annually as same as now.

**3. Cropping pattern :**

Farmers suggested that they do harvest and then planting intensively and simultaneously in order to finish the 3<sup>rd</sup> crop

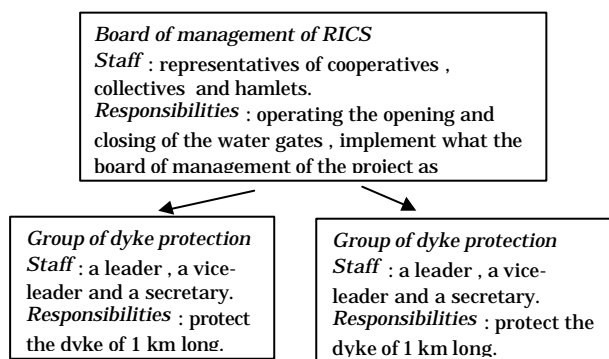
around the middle or at the end of September (western calendar). After that, they let the flood water into their paddy field to destroy the weed, rat and other harmful insects. The cropping pattern should be changed in case it appears unsuitable after practice.

**4. Social infrastructure :**

- (a) In Gao Giong commune
  - Construct a new dike in the northern side of Cong Dien canal in the width of 2.5 meters; upgrade the southern side; install 2 water gates in 3 meters width at the 2 ends of the canal .
  - Install a water gate of 2 meters wide in Moi canal.
  - Install 2 water gates in canal No. 4 (one of them is newly installed and the other needs to be upgraded)
  - Install totally 17 culverts.
  - 2 bridges for car in Duong Gao canal and Gao Giong canal.
  - A pier in hamlet 2.
  - Along the dike system, the approach for bike and farming machine needs to be installed at every 1 km of the dike.
- (b) In Binh Tan commune
  - Build 4 piers.
  - Bridge for car in Mui Tau canal.
  - Install 5 water gates in Ba Le canal, Sau Nho canal, Mui Tau canal and Ba Suu canal ( 2 out of 5 in Ba Suu canal )
  - Install totally 17 culverts.
  - Build 2 bridges for bike in Mui Tau canal and the canal in the boundary of Gao Giong commune.
  - Along the dike system, the approach for bike and farming machine needs to be installed at every 1 km of the dike.

**5. Operation and Maintenance :**

The chart of O/M the dike system is illustrated as follow



- Board of supervisors to be established to inspect the implementation of the project. The members of the board will consist of those assigned by the PC province and representatives of the local people in the project area.
- Legitimacy of the dike protection is based on the decree 171 and 172 issued by the state government.

**6. Expense of the project :**

The local people suggested that the government should cover 70% total expense of the project, the rest of 30% will be paid by the beneficiaries upon the condition that the government will support them with long-term loan ( 20 – 30 years ) and low interest.

The repayment of the loan and the payment of the interest begin in the 11<sup>th</sup> year after the project was completed.

**7. Mitigation of negative impacts :**

The negative impacts of the project and the solutions for these impacts are listed below :

- Amount of fish and alluvium is reduced because the dike is upgraded and floodwater just gets inside the paddy fields

through the water gates and culverts ... However, it is not a big concern actually as the amount of fish and alluvium will be reduced but not disappear definitely. The project itself will improve the road transportation network and inner-commune road transportation, enable to do triple crop, create more jobs.

- The release of AS can be solved by using good fertilizer and making a small ditch at the bottom of the dike so that AS will get into the ditch then outside the paddy field. According to the experience of the local farmers, AS is mainly released from the bottom of the dike.
- Environmental pollution can be mitigated by using non - chemical or environment friendly solutions and fertilizer with a sensible quantity, manage waste water and rubbish appropriately and strengthen the role of the local organizations.
- The increase of rats and other harmful insects can be solved by cultivating new anti-insects varieties of paddy seed ; driving the rat into the rubber bag or another combined solutions.
- Land lost and house removal : the financial support and the compensation for those whose have to remove houses or loose land must be carried out properly and satisfactorily.

**8. Comments of the local people upon the project :**

The information on the total expense of the project as well as the payment of each household must be informed after the design of the project is finished.

### **Technical Transfer Seminar**

Based on the these results, the draft of EIA operation manual was prepared particularly focusing on the consensus building of social survey. The execution plan for social survey of EIA is suggested in the Draft and those ideas were explained in the technical transfer seminar held on April 28<sup>th</sup>, 2000. In the seminar, opinions on survey for consensus building were exchanged.

### **M.3.5 Proposed Methodology of the Social Survey on Consensus Building**

Primary objective of the survey is to build public consensus of the project. In order to achieve this objective, the survey is carried out putting great importance on the process of people's participation and information disclosure.

#### **(1) Formulation of the survey team**

Main members of the team will be the officials of the district DARD. They know the area and local people, especially key persons in the community, well. Basically they have a sense of responsibility for the locality. Through the survey, they become more aware of local people's needs and their sense of responsibility are strengthened. It is strongly recommended to assign professionals of community development and/or rural sociology to be chief supervisors.

Followings are duties and responsibilities of team staff. One team will have one team leader and at least three surveyors (hereafter, called "**the survey team**" or simply "**the team**"). One team is in charge of one "rotational unit" consisting of three dike units (hereafter, one rotational unit is called "**the survey area**" or simply "**the area**"). Several teams are formed under the supervision of one or two chief supervisors and some assistant supervisors.



**Chief supervisor(s):**

Expert(s) who has a degree of sociology, and rich working experience in the field of community development and sociological research, working with NGOs and international organizations.

They supervise all survey teams and to provide necessary advice and guidance from the viewpoint of community development.

**Assistant supervisor(s):**

Official(s) of province DARD in charge of infrastructure and/or agricultural development who has engineering background and enough working experience in the locality.

They assist chief supervisor(s) and manage a coordination of all survey teams' activities.

**Survey team leader(s):**

Official(s) of district DARD in charge of infrastructure and/or agricultural development who has engineering background and enough working experience in the locality.

They lead the activities of their survey teams and take a responsibility for their surveyors' performance.

**Surveyors:**

Official(s) of district DARD and commune PC in charge of infrastructure and/or agricultural development.

They conduct a survey under the team leader.

**(2) Training of the Survey Staff**

Both of "Small Scale Dike System Improvement Project" and survey methods for consensus building are entirely new for survey staff including chief supervisors, assistant supervisors, survey team leaders and surveyors. Therefore, it is essential to give appropriate training for the survey staff to learn the project and survey methods.

**Understanding of the project**

Survey staff must be well equipped to explain the project to local people. Chapter 2 and 4 of this operation manual will be a good textbook for the training.

**Understanding of the survey methods**

The chief supervisors will be trainers. Assistant supervisors, survey team leaders and surveyors should have good understanding of the survey methods entailing participatory approach. The principal role of the survey staff is to be a facilitator who encourages local people to express their own opinions, coordinates frank and friendly discussion, and leads good cooperation and understanding among stakeholders. Therefore, the staff should learn the concept of participatory approach, and norm of behavior and attitude to develop a good rapport with local people.

### (3) Survey Procedure

Outline of the survey steps is shown below. It takes about 7 weeks to finish all steps.

**Schedule of the one survey cycle**

Activity	No. of week	1	2	3	4	5	6	7
1 Identification of the stakeholders								
2 Stakeholder meeting 1								
3 Technical Working Group Discussion								
4 Stakeholder meeting 2								
5 Public hearing								
6 Hamlet discussion								
7 Consensus building assessment								
8 Stakeholder meeting 3								
9 Summarization of the survey								

#### [1] **Identification of the stakeholders**

“Stakeholder” is defined as any individual, group and organization that have some relation to the project. The persons shown in following table are considered as representatives of stakeholders of this project. The survey team should identify these persons in the survey area and invite them to the stakeholder meeting.

#### **List of participants in the stakeholder meeting**

<b>A. Local authorities and leaders in the survey area</b> <ul style="list-style-type: none"> <li>• Hamlet leader</li> <li>• Cooperative leader</li> <li>• Collective leader</li> <li>• Leader of local group and organization (e.g. women’s union, farmers’ union, etc.)</li> <li>• General secretary of the commune’s Communist Party</li> <li>• Chairman or Vice-chairman(in charge of infrastructure and/or agriculture) of the commune’s People’s Committee</li> </ul>
<b>B. Ordinary people in the survey area</b> <p>They should be selected from different social group and strata based on following criteria)</p> <ul style="list-style-type: none"> <li>• Economic situation (rich, average, and poor)</li> <li>• Occupation (farmer and non-farmer)</li> <li>• Age generation (young, middle, and elder)</li> <li>• Sex (male and female)</li> <li>• House and farmland tenure                             <ul style="list-style-type: none"> <li>- Those who hold farmland and house inside the survey area</li> <li>- Those who hold farmland outside and house inside the survey area</li> <li>- Those who hold farmland inside and house outside the survey area</li> <li>- Those who hold no farmland but only house inside but survey area (landless farmers)</li> </ul> </li> </ul>

In selecting some ordinary people as participants, the survey team should ask help of hamlet, cooperative,

collective, and other local group leaders who know well the residents in the area.

**[2] The first stakeholder meeting**

**(Objectives)**

- To notify concerned local people of the proposed project,
- To listen to the initial opinions of local people about the proposed project, and
- To choose the members of the Technical Working Group.

**(Preparation)**

The survey team should prepare the material including necessary information on the project to distribute to each participant. In addition, it is recommended to write description and illustration on large pieces of paper and display in front of participants when the survey team explains the project. Such display can draw more attention from the participants and keep their concentration. Using a visual aid such as OHP should be also taken into consideration. Moreover, participants' list should be prepared to check their attendance.

**(Meeting procedure and roles of the survey team)**

1. Receiving participants and check each one's attendance
2. One of the survey team members taking chairmanship, opens the meeting.
3. One or some of the survey team members explains the project.
4. Taking short break to give participants the time to think.
5. Starting discussion. One of the survey members facilitates discussion. The survey team also answers to the questions from the participants.
6. Chairman summarizes opinions.
7. Selecting the members of Technical Working Group (see [3])

**(Where should the meeting be organized?)**

It should be a place where the stakeholders can access easily.

**[3] Technical Working Group discussion**

Selected representatives of the stakeholder meeting participants form Technical Working Group (TWG). TWG plays a leading role in successive activities in the survey with the survey team. First, the survey team and TWG discuss the proposed project further in detail to have a clear understanding. Then, TWG examines whether the project is acceptable for local people in order to reach primary agreement. If TWG considers that some of the project components need modification, it should be ready to present at the second stakeholder meeting as a suggestion from local people. Moreover, the survey team should ask cooperation of TWG to hold public hearing and hamlet discussion (see [5] and [6]). Based on the overall schedule of the survey and convenience of the TWG and local residents, the schedule of public hearing

and hamlet discussion is decided.

**(How to select the TWG members?)**

Basically, the participants of the first stakeholder meeting choose the members with a consensus. The survey team should give them selection criteria as follows. If it seems difficult for participants to choose, the survey team can suggest who can be the candidates and let them decide.

**(Selection criteria of TWG members)**

- District DARD and commune PC officials are already included in the survey team, so the members should be selected from non-officials, that is, from local leaders and ordinary people in the survey area.
- About 15 members in total (it may be maximum)
- Half of members from local leaders and the other half from the ordinary people
- At least 4 women should be included
- Distribution of the members should be even among the dike units

**(How TWG carries out the work and the roles of the survey team)**

1. One of the surveyors from commune PC takes chairmanship of the TWG.
2. The role of the survey team is to facilitate the discussion and give advice to TWG based on their knowledge of the project.
3. Half-day session is held at least three times.

TWG examines following issues and confirms whether the local people can agree.

- 2 FOR INTRODUCTION OF ROTATIONAL INUNDATION SYSTEM
  - Shape of dike unit (Division of dike unit)
    - ✓ Do local residents agree with the division of dike unit?
    - ✓ If not, how to divide or combine?
  - Rotational inundation system
    - ✓ Do local residents agree with the suggested rotational inundation system?
  - Suggested cropping pattern
    - ✓ Is suggested cropping pattern acceptable for farmers?
    - ✓ If not, how to change it?
- 3 FOR FARMING PRACTICE
  - Restriction of boat transportation and installation of water gates
    - ✓ Do local residents accept the situation they are forced to unload/load goods at the dike in some existing internal canal? (It means, entrance of some existing internal canal will be shut for boat transportation.)
  - Installation of culverts for irrigation pumping and drainage
    - ✓ Is the water management work using proposed structures (culvert and stop logs) acceptable for local residents?
- 4 FOR DESIGNING FACILITIES
  - Equipment/facilities to be planned to install
    - ✓ Do local residents agree with proposed equipment/facilities to be installed?
    - ✓ Do local residents agree with the locations of those equipment/facilities?
    - ✓ If not, how to change them?

- 5 FOR OPERATION AND MAINTENANCE
- Maintenance of dike and road
    - ✓ Do local residents agree with the proposed framework of dike and road maintenance?
    - ✓ If not, how to manage maintenance?
  - Operation and maintenance of irrigation and drainage facilities
    - ✓ Do farmers agree with the proposed framework of operation and maintenance?
    - ✓ If not, how to manage operation and maintenance?
- 6 FOR NEGATIVE IMPACTS
- Predicted negative impacts caused by the project
    - ✓ Are the predicted negative impacts acceptable for the local residents?
    - ✓ If not, how to manage them?
  - Land loss and temporal removal of houses by the dike improvement
    - ✓ Are land loss and temporal house removal acceptable for the local residents?
    - ✓ If not, how to manage them?

#### **[4] Second stakeholder meeting**

The purpose of the second stakeholder meeting is to inform the stakeholders the result of TWG discussion and to assess the primary response of local people to the project. In addition to the participants of the first stakeholder meeting, following “stakeholders”, who are officials in charge of the survey area, should be also invited to let them know the local people’s opinion and to get their primary approval. At the end of the meeting, the schedule of next activities such as public hearing, hamlet discussion, consensus building assessment and the third stakeholder meeting are informed to ask cooperation and understanding of the participants.

#### **(Who should be invited in addition?)**

The representatives of

- Province DARD, - District DARD, - District People’s Committee, - District Communist Party

#### **(Preparation for the meeting)**

TWG and the survey team should prepare the material to show the result of TWG discussion to participants. It is again recommended to use large papers with hand written description and illustration for display. It is easy for not only TWG and the survey team members but also the participants to discuss with looking at same papers together. In addition, it only requires some pieces of paper and pens, so local people can do their preparation even at their house.

#### **(Meeting procedure and roles of the survey team)**

1. Receiving participants and check each one’s attendance
2. One of the survey team members, taking chairmanship, opens the meeting.
3. Representative of TWG presents the result of TWG discussion.
4. Taking short break to give participants the time to think.
5. Starting discussion. One of the survey team members facilitates discussion. The survey team

and TWG answer the questions from the participants if necessary.

6. Chairman summarizes the conclusion of the meeting.
7. Chairman explains the next schedule of the survey.

**(Where should the meeting be organized?)**

Principle is the same as the first stakeholder meeting.

**[5] Public hearing**

The public hearing aims at disclosing the project information to local residents in the area. The TWG and the survey team should arrange public hearings in several different places within the survey area in order to enable more number of people to come and attend the hearing at their nearest place. At least, one third of total residents should be invited. Considering availability of the places, which must be the some houses of the local people, recommended number of participants for one hearing is about 30. It should be reminded that the TWG and the survey team ask the participants to explain to their neighbors who do not attend the hearing so that information on the project will be disseminated among most of the residents.

The roles of members of TWG and the survey team are to arrange the meeting places, prepare the project descriptions and explain the project to the participants at the hearing.

**[6] Hamlet discussion**

After local residents get the information on the project, hamlet discussion is organized in the same manner as the public hearing. TWG and the survey team are again responsible for its arrangement. The purpose of this hamlet discussion is to give the opportunity for local residents to exchange opinions among them. It also helps to correct their misunderstanding of the information that was sometimes transferred with distortion from persons to persons.

The roles of TWG and the survey team are to arrange the meeting places, prepare the project description, then, at the meeting, to facilitate discussion, answer the question from the participants, and to sort and summarize the opinions for the third stakeholder meeting. Some of the meetings should be set only for women. In this locality, women tend to hesitate to speak out with the presence of men, so it is more comfortable for women to talk among themselves.

**[7] Consensus building assessment**

It aims at evaluating whether the local people understand and agree with the project or not. Questionnaire survey is conducted for all households.

**[8] The third stakeholder meeting**

The purpose of the third stakeholder meeting is to sort the result of hamlet discussion and consensus

building assessment, and then to make a final decision whether the project is acceptable for local residents or not. If participants, who are the “stakeholders” of the project, consider that the project should not be implemented because of some rational reasons based on the survey results in conclusion, the project will not be introduced in the survey area.

**(Who should be invited?)**

Same persons in the second stakeholder meeting are invited.

**M.3.6 Proposed EIA Survey Execution Plan**

The Dimensions of Pre-F/S Area are summarized below.

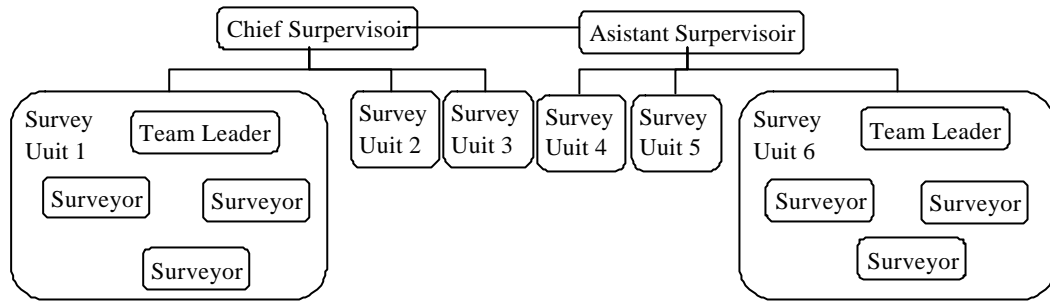
Block	Block No.4	Block No.8
Category	Middle inundation area	Shallow inundation area
Province	Dong Thap	Tien Giang
Related Districts	Than Bin, Cao Lanh, Than now	Cay Be, Cay Lay
No. of Communes	8	13
Project area	17,000 ha	17,000 ha
Agricultural land		
No. of Dike unit	33	34
No. of households		
Population		

The EIA survey execution plan for natural environmental issues is under preparation now and it will be clarified by end of June.

The EIA survey execution plan for social environmental aspects focusing on the consensus building of the beneficiaries is proposed below;

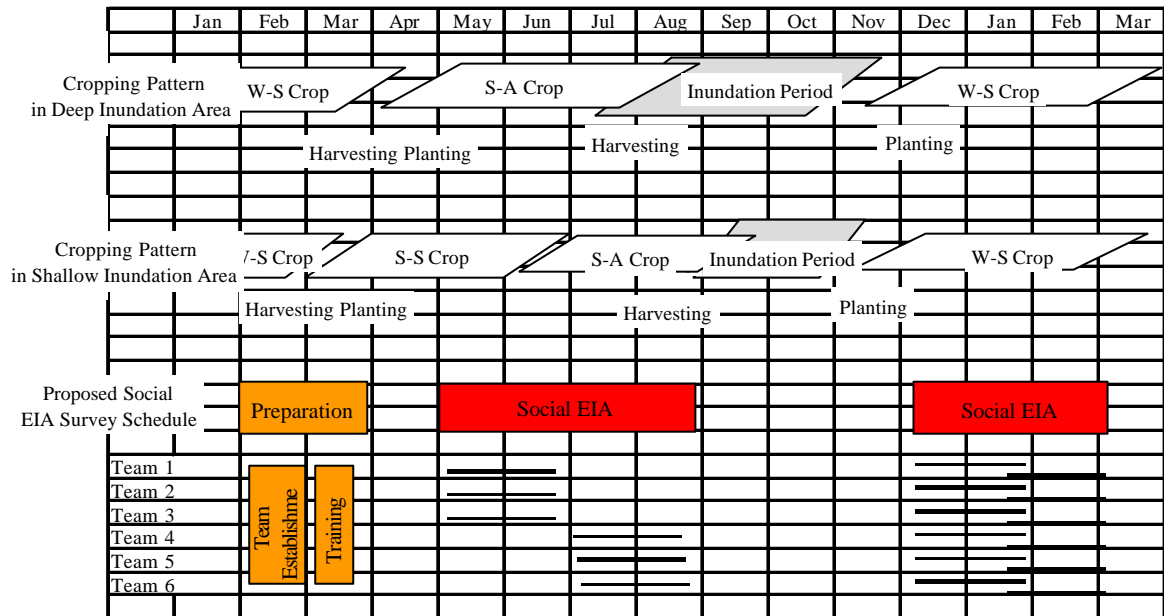
1) Survey Team

The one survey unit will covers around 2,000 ha (3 to 4 Dike units) and it will take around 7 weeks. The survey team for 1 survey unit will consist of one team leader and 3 surveyors. And 6 survey teams will make EIA on social impacts under supervising of one chief supervisor and one assistant supervisor.



2) Survey Schedule

At first, the training for survey team will be carried out for 1 to 2 weeks to understanding the project idea for survey teams. The social survey will be scheduled considering farming practice as shown below.



Tentative EIA Survey Execution Plan

One team will take three survey units (one unit: 2,000 ha) and totally 18 survey units (33,000 ha) will be covered.