

2-5 Project Cost

2-5-1 Estimation of the Project Cost

The overall construction cost under the Japanese assistance is mentioned below.

- (1) Overall project cost : around 578.7 million yen
- (2) Project cost to be undertaken by Japan: around 578.4 million yen

Table 2-52 Project cost to be undertaken by Japan

Item	Amount (million yen)
Total construction cost (I+II)	578.4
I. Overall construction and procurement	505.0
A. Civil works (A1+A2)	505.0
A1. Net construction cost (a+b+c)	470.4
a) Direct construction	277.9
b) Temporary work	38.5
c) Site management cost	90.6
d) Ordered construction	63.4
A2. Overhead	34.6
II. Design supervising cost (1+2)	73.4
1. Civil design, supervising	65.7
2. Soft component	7.7

- (3) Project cost to be undertaken by Timor-Leste : 0.31 million yen

Table 2-53 Project cost to be undertaken by Timor-Leste

Item of cost	Local currency (US\$)	Japanese yen
1) Land acquisition cost for widening canal section	720	
2) Compensation cost for tree	150	
3) Land rent for Works of temporary canal at intake weir	202	
4) Land rent cost for works of bank protection at aqueduct	41	
5) Land rent cost related to the construction of architectural facilities	1,728	
6) Cost of newly constructed tertiary canals by beneficiary	Beneficiaries' contribution	
Total	US\$ 2,841 Lump sum 2,900	Million yen 0.31

(4) Conditions of estimation

- 1) Time of estimation: The estimation is was done as of March 30th 2005, at the completion of BD field study.
- 2) Exchange rate employed for conversion: 1 US\$ = 107.07 yen (US\$ is employed as local currency)
- 3) Construction period: Construction period is specified in the implementation work schedule (10 months)
- 4) Others : This Project is carried out in compliance with the system of Japan's Grant aid scheme. The overall project cost as given above does not indicate the limit of Grant on the Exchange Notes.

2-5-2 Operation and Maintenance Cost

(1) Annual operation and maintenance (O/M) cost and water user's fee to be collected

Required operation and maintenance cost (O/M) of this project is estimated at about 16~21 US\$ / ha / year in line with the method of calculating O/M costs employed by MAFF. O/M costs consist of 1) allowances to be paid to four board members of WUA after the establishment thereof, 2) personnel cost required for trainings and monitoring after transferring irrigation facilities, 3) operative return for gate operation by gate keeper or by group leaders, 4) costs for maintaining gates such as purchase of lubricating oil, recoating, exchanging water-seal rubber etc., 5) repairing costs for facilities and 6) labor hiring costs for such routine works as manual scouring in scouring sluice and sediment settling basin, regular dredging and weeding etc.(not actually incurred, or shadow cost). In these costs, 1) allowance to be paid to cadres of WUA has not been included in the following estimation since the rates will be decided in the mutual consultation among beneficiaries.

Table 2-54 Required annual O/M cost in each 5-year period for 25 years (unit: US\$/year)

Item of cost		Required annual O/M cost in each 5-years (unit: US\$/year)					Remarks
		1-5 th year	6-10 th year	11-15 th year	16-20 th year	21-25 th year	
A. Allowance of WUA board (not estimated)							salary of 4 board members of WUA
B. Personnel cost for instruction	1) DIO advisor	240	240	-	-	-	estimated up to 10 th year
	2) OM coordinator	1,800	1,800	-	-	-	estimated up to 10 th year
	3) Manipulation (M) of intake gates	900	900	900	900	900	estimated up to 11 th year as gate keeper
C. Water distribution works	1) (M) offtake gates	2,640	2,640	2,640	2,640	2,640	22 persons of Group Leaders
	2) (M) intake gate	180	180	180	180	180	1 intake gate keeper
D. Maintenance cost of gates (intake F.) for 8 leaves of gate	1) Lubricant injection	502	628	628	628	628	Taking place once a year
	2) Recoating painting	0	673	673	224	449	Once in 7 years div by 3 terms
	3) WT Rubber exchange	0	0	623	1,246	0	Once in 15 years div by 3 terms
(offtake Facility) for 65 leaves of gate	1) Lubricant injection	632	790	790	790	790	Taking place once a year
	2) Recoating painting	0	1,093	1,093	364	729	Once in 7 years div by 3 terms
	3) WS Rubber exchange	0	0	810	1,620	0	Once in 15 years div by 3 terms
E. Compensatory cost for Facility	1) Riverbed protection works	695	869	869	869	869	3% of direct construction cost for riverbed protection works
	2) Riprap bank protection	2,190	2,737	2,737	2,737	2,737	2% of ditto for bank protection
	3) Main canal	1,099	1,373	1,373	1,373	1,373	1% of ditto for bank lining
	4) Ramaskora 2ndary canal	2,116	2,645	2,645	2,645	2,645	1% of ditto for bank lining
	5) Ritabau 2ndary canal	2,135	2,668	2,668	2,668	2,668	1% of ditto for bank lining
F. OMRoutine works (labor-cost component)	1) Dredging works	801	801	801	801	801	Scouring works : 267 m ³ /year
	2) Weeding in canals	1,610	1,610	1,610	1,610	1,610	total length weeding 10.7 km/year
Total operation/maintenance (O/M) (US\$/year)		17,539	21,647	21,040	21,296	19,018	
Annual mean O/M cost /ha(US\$/ha/year)		16.7	20.6	20.0	20.3	18.1	Target area : 1,050ha

Note: 1) In the table, items A, B and C are decided through conferring among members. O/M cost for B, C is provisional by MAFF.

2) F is labor contribution among beneficiary farmers where no real expense takes place.

(2) Balance between annual operation and maintenance (O/M) cost and amount of water fee collected

The following amounts of O/M cost as shown in the below table are resulted from the phased estimation in compliance with “the policy for WUA and O/M of irrigation facilities (draft)”, and subsidies by MAFF is counted on the other, where the project period is divided into three phases; namely, 1) the 1st period of initial 5 years with the subsidy equivalent to 70% of the O/M cost, 2) the 2nd period from 6th to 10th year with the subsidy equivalent to 30% of the O/M cost and 3) the 3rd period after 11th year or later without any subsidy or after transferring irrigation facilities to WUA until 25th year during which re-coating of gates (every 7 years) and exchange of rubber seal (every 15 years) will take place.

Table 2-55 Required annual water fee for 25 years to be collected from WUA

Items	Period	1 st period	2 nd period	3 rd period			average
		1-5th year	6-10th year	11-15th year	16-20th year	21-25th year	
Annual A.V. O/M Cost (US\$/year)		17,539	21,647	21,040	21,296	19,018	20,451
Subsidy from MAFF: (1-5th year: 70%, 6-10th year: 30%) (US\$/year)		12,277 (70%)	6,494 (30%)	0	0	0	0
Necessary Annual Water Fee collected from WUA (US\$/year)		5,262	15,153	21,040	21,296	19,018	20,451
Required Annual Water Fee collected from WUA / ha (US\$/ha)		5.0	14.4	20.0	20.3	18.1	19.5

Plan of water fee collection from beneficiary users can be examined based on the necessary annual O/M cost shown in Table 2-56. Provided necessary O/M cost is borne by water fee collection under the condition below, “Balance of the water fee collected” for 25 years after rehabilitation is shown in "reference 5-11 Balance sheet for O/M cost and water fee collecting by year".

Conditions for calculation on balance of O/M cost and collected amount of water fee

- 1) The water fee collected shall be set enough to meet necessary annual O/M cost. Moreover, the remainder shall be reserved for re-coating of gate (every 7 years) and exchange of rubber seal (every 15 years), and the amount of water fee shall be determined in a way no deficit in deposit shall occur.
- 2) The interest 1.5% is taken into account.
- 3) Out of the above-cited water fee, fixed rate of water fee is applied to the planted area in rainy season (75%) and piece rates of water (user's) fee are applied to the planted area in dry season (25%).
- 4) Water fee collected at piece rates is 80% of usual once in 5 years, taking account of the low-flow reliability.

Table 2-56 Consideration of required annual O/M cost in each 5-year period

Period	Required annual O/M Cost	Water Fee Collected
1. 1 st period : 1-5 th year (5 years)	5.0 US\$/ha	5.5 US\$/ha shall be collected because the amount in the left column cannot offset the shortfall for the drought year occurring once in 5 years. The remainder is reserved for the cost of gate re-paint in 2 nd phase.
2. 2 nd period : 6-10 th year (5 years)	14.4 US\$/ha	15.5 US\$/ha shall be collected because the amount in the left column cannot bear the re-coating cost for 3 years from 6 th to 8 th year, and the remainder is reserved for the cost of gate re-paint (every 7 years) and rubber seal exchange (every 15 years) in 3 rd phase.
3. 3 rd period (a) : 11-15 th year (5 years)	20.0 US\$/ha	20.5 US\$/ha shall be collected because the amount in the lowest left column is not enough to bear the cost of gate re-coating and rubber seal exchange occur continuously for 6 years from 12 th to 17 th year.
4. 3 rd period (b) : 16-20 th year (5 years)	20.3 US\$/ha	
5. 3 rd period (b) : 21-25 th year (5 years)	18.1 US\$/ha	
Average of 3 rd period	19.5 US\$/ha	
6. 4 th phase after 26 th year	Repeating the same in 3 rd period	

The result of the above tabulated cost balance estimation is compiled in Table 2-57. In preparation for the concentrated cost incurring during the 3rd period from 12th to 17th year, the fixed amount, 20.5 US\$/ha will annually be collected throughout the whole cycle. In this estimation, the total collected amount comes to 428,610 US\$.

Table 2-57 Examination on the balance of the annual water fee in each 5-years period for 25 years

Cycle period		1 st period	2 nd period	3 rd period (a)	3 rd period (b)		Remarks
MAFF subsidy		70%	30%	No MAFF subsidy applied			
year	year	1 st -5 th year	6 st -10 th year	11 th -15 th year	16 th -20 th year	21 th -25 th year	
Annual mean water fee (US\$/ha)		5.0	14.4	20.0	20.3	18.1	Counting MAFF subsidy
Water fee to be collected (US\$/ha)	Fixed fee	4.0	12.0	15.0			equiv. to cropped area r.s.75%
	Piece rate fee	1.5	3.5	5.5			equiv. to cropped area r.s.25%
	Total	5.5	15.5	20.5			Total for 25 years
Every 5 years cumulative depo. amount		2,422	7,635	9,810	10,350	22,948	428,610 US\$

Note: equiv. : equivalent, r.s.: rainy season, d.s : dry season, depo: deposit reserve

(3) Relevance of the amount of collected water fee

① Compatibility with other projects

This proposal assumes the application of the subsidy from MAFF and the rate of water fee is planned at gradual escalation from initial 5 US\$/ha to maximum 22 US\$/ha (option-2). In the WB F/S report the O/M cost after implementation of the Project is estimated at 26 US\$/ha and the same amount is applied to water fee. In addition, MAFF has imposed an obligation of setting water fee to be collected to the irrigation systems under rehabilitation or planned assisted by the WB and/or other international consultants in the light of "Policy for WUA and O/M of irrigation facilities (draft)", where the level of water fee is estimated at 20~25 US\$/ha. This amount, to be collected from the users, is considered almost equivalent to that suggested in the Project.

② The amount of voluntarily payable fee by the beneficiaries

MAFF held a workshop at the site of Maliana I at the occasion of explaining outline of basic design, inviting 5 village chiefs, group leaders etc. It presented the principles in this workshop of "1) to assist establishment of WUA and to monitor after the establishment, 2) to assist WUA by providing subsidy on the O/M cost at the rate of 70% for the initial 5 years after the rehabilitation of existing facilities followed by the rate of 30% during 6th - 10th year". Then it made the attendants recognize that the subsidy rate is reduced from 70% to 30% from the 6th year and completely lifted from the 11th year. Later, 5 village chiefs were asked their intention to pay for water fee at the initial stage of rehabilitated irrigation. There was a wide range among their reply from 1US\$ to 10US\$, but after a long consultation they gave the final reply of the level "around 5 US\$/ha at the initial stage".

No concrete proposal was made from village chiefs as to their voluntarily payable amount for water fee, however, taking the water fee of puddling tractor for lease, 60 US\$/ha/day, the proposed future rate of water fee, 20.5 US\$/ha is considered reasonable for the rate imposed from 11th year or later provided that irrigation is securely performed allowing paddy yield to increase.

③ Post-Project gross earnings and collectable amount of water fee

The gross earnings of the beneficiaries of Maliana I irrigation system after rehabilitation is estimated in Table 2-58. With regards to planted area, it's assumed to plant paddy over the irrigated command of 1,050 ha as water intake is stabilized in rainy season. In dry season, it's planned to cultivate paddy on 150 ha irrigated area and maize on 200ha. Assuming that the beneficiaries sell their crop at the purchasing price set by ASC, the annual gross earnings is estimated at 513 US\$/ha.

Table 2-58 Estimation of gross earnings after the Project implementation

		Planted area (ha)	Unit yield (ton/ha)*1)	Production (ton)	Purchasing Price set by ASC (US\$/ton)*2)	Gross earnings	
						(US\$)	(US\$/ha)
1.Rainy season	1) Irrigated Paddy	1,050	2.8	2,940	120	352,800	336 US\$/ha
2.Dry season	1) Irrigated Paddy	150	2.8	420	120	50,400	
	2) Maize	200	2.7	540	250	135,000	
Sub-total		350				185,400	530 US\$/ha
Annual (a Rainy season plus a Dry season) gross earnings		1,050				538,200	513 US\$/ha

Remarks: *1) The current maximum unit yield in the result of baseline survey is applied.

*2) The result of hearing from ASC office of Bobonaro district.

Among the Asian countries where O/M of irrigation system is transferred to WUA, water fee equivalent to about 3-4% of gross earnings of the irrigation beneficiaries is collected in the Philippines. In Mexico, the national economy has been facing hardship since 1980's and the program to transfer O/M to WUA is on the way. Under the assistance of the WB, IIMI (International Irrigation Management Institute) has been studying the relevance of the amount of water fee for a long time, yielding a result that the amount beneficiaries can pay continuously is about 3-5% of gross earnings.

Table 2-59 Ratio of the water fee to gross earnings

Cycle	1 st Period	2 nd Period	3 rd Period(a)	3 rd Period(b)		Remarks Annual
	1-5 th year	6-10 th year	11-15 th year	16-20 th year	21-25 th year	
Amount of water fee (US\$/ha)	5.5	15.5		20.5		gross earnings
Ratio to gross earnings (%)	1.1%	3.0%		4.0%		: 513 US\$/ha

Judging from what is mentioned above, the amount of water fee collection from 11th year or later, of 20.5 US\$/ha, is considered relevant since the amount is equivalent to around 4.0% of the gross annual gain.

④ Proposal of reserve management

Micro Finance Institute is currently leasing micro credit at an annual interest rate of 18% in Maliana I area and some of the beneficiary farmers utilize it. According to the estimated balance of the reserve of water fee shown in Annex 8-11 "Calculated balance between O/M costs by year and collected water fee", the amount of reserve is 15,000 US\$ for 15 years after 11th year. It's expected that the instruction of financial management to make use of this reserve in the soft component plan would contribute to the enlightenment for improving rate of water fee collection.

2-6 Other Relevant Issues

2-6-1 Relevant Issues

(1) Environmental and social consideration

As regards to environmental and social consideration, MAFF submitted the application for development to SSECTOPD in April 2005. SSECTOPD conducted a site study for screening environmental impacts and judged that the applied project is classified as category B, and informed MAFF to formulate an EMP in compliance with the environmental guideline (January 2006).

From now, MAFF will provide an EMP in line with the environmental guideline to ask for the approval of SSECTOPD prior to the Project implementation, and this is a precondition to implement the Project.

(2) Strengthening of sustainable operation system of WUA

According to "Policy for WUA and O/M of irrigation facilities (draft)", MAFF assists establishment of WUA and strengthening of its management, and from 11th year after rehabilitating irrigation facilities and later it will completely transfer their operation and maintenance to WUA. During the transitional period, MAFF is requested to share the cost and to monitor towards WUA including what is contained in the framed article shown below; The board members of WUA has already been elected in March 2006, thus its activities are expected to develop. In this respect, it is indispensable that MAFF provides sustainable support for strengthening management of WUA towards the realization of proper management and O/M after the rehabilitation of irrigation facilities.

(3) Budgetary provision for the expense items to be borne by Timor-Leste

In implementing Grant aid scheme, Timor-Leste is required to bear the cost of land acquisition cost accompanying with widening the width of canals, cost of land rent for temporary canals for rehabilitation works of the intake weir and for works of protection wall for aqueduct etc. The amount to be undertaken by Timor-Leste is estimated at 2,900 US\$ (or about 310 thousand yen), and this amount is considered small as compared to annual budgetary account of MAFF, 1,573 thousand US\$ (fiscal year 2004/2005), thus it is considered within bearable extent. On the other hand, MAFF is requested to explain the construction of tertiary canals (about 12 km in length), the component to be borne by the beneficiary, to the beneficiary people, where the relevant assistance and instruction thereof is required (refer to Table 2-53 "Cost to be undertaken by Timor-Leste").

"Outline of the Policy for WUA and O/M of Irrigation Facilities (draft)"

(Abstract of JICA short-term Expert Report)

- (1) A WUA shall be established in every rehabilitated/newly constructed irrigation scheme, and all the farmers under each irrigation scheme shall be organized into the WUA established.
- (2) All the WUAs established shall be registered as the juridical organizations.
- (3) Irrigation water fee shall be collected from all the farmers belonging to the designated WUA, and WUA will keep the fee in the bank account established, and the water fee collected shall be used for O/M of the irrigation facilities as required.
- (4) WUA shall implement, at its own expense, such construction works as additional construction of irrigation canal systems including construction of attached structures, which exceed the responsibility of the Government.
- (5) All the rehabilitated/newly constructed irrigation schemes shall be taken over by the designated WUAs, and WUAs shall be responsible for O/M of the irrigation facilities. The Government shall provide the Seed Fund with WUA for the period of 5 years after taking over the irrigation scheme by the WUA. The Seed Fund will help farmers buy seeds and accelerate O/M activities of the irrigation facilities by the farmers. The draft O/M also suggests that 30% of the Seed Fund shall be borne by the farmers.
- (6) The cost sharing in O/M of the irrigation facilities between the Government and the farmers is suggested as follows;

Cost Sharing in Major Repairs

(First year to Fifth year)

- 1) 70% of the total cost shall be borne by the Government, including cash, materials, fuel and technical assistance etc.
- 2) 30% of the total cost shall be borne by the farmers, including the cost for materials and labors.

(Sixth year to 10th year)

- 1) 30% of the total cost shall be borne by the Government.
- 2) 70% of the total cost shall be borne by the farmers.

(Beyond the 11th year)

No cost for O/M of the irrigation facilities shall be borne by the Government budget; instead, WUA shall bear all the cost required for O/M of the irrigation facilities.

Cost Sharing in Minor Repairs

All the minor repairs of the irrigation facilities shall be made by the WUAs at their own cost, and no subsidies shall be made by the Government.

- (7) The draft O/M suggests that Irrigation Systems Management Committee (ISMC) should be established in every district of the country. ISMC shall consist of government officials, members of the WUA, and NGOs. In the committee, problems with respect to agricultural production, such as yield, pests, and irrigation water distribution etc. will be discussed based on their experiences. And the outcomes from the discussions will be utilized for improvement in agricultural production as well as improvement in the technique for o/M of the irrigation facilities. According to the draft O/M manual, ISMC should be held at least 3 times during farming period, i.e., the first meeting before commencement of irrigation, the second during irrigation, and the third meeting after finishing irrigation. In the case, members of the WUA request to hold another meeting to discuss important issues with respect to farming activities and WUA, the irrigation officers in charge shall call another meeting to settle the problems.

2-6-2 Soft Component Plan

(1) Background of Soft component planning and issues to be solved

① Strengthening of Water Users Associations (WUA)

MAFF intends to establish WUA also in Maliana I irrigation scheme in line with "Policy for WUA and O/M of irrigation facilities (draft)" and transfer all of the maintenance, management and repairs of irrigation facilities thereto from the 11th year after the rehabilitation. It follows that necessity arises for WUA to cover its O/M cost by collecting itself water (user's) fee. This is the reason why strengthening of managerial capacity of WUA should be urged.

The above-mentioned WB has developed APR3 (since 2004) as a component of APR with a view of creating a system and nurturing human resources for strengthening WUA under APR3 (since 2004). In this connection, the proposed process of organizing and strengthening WUA is shown in Figure 2-15.

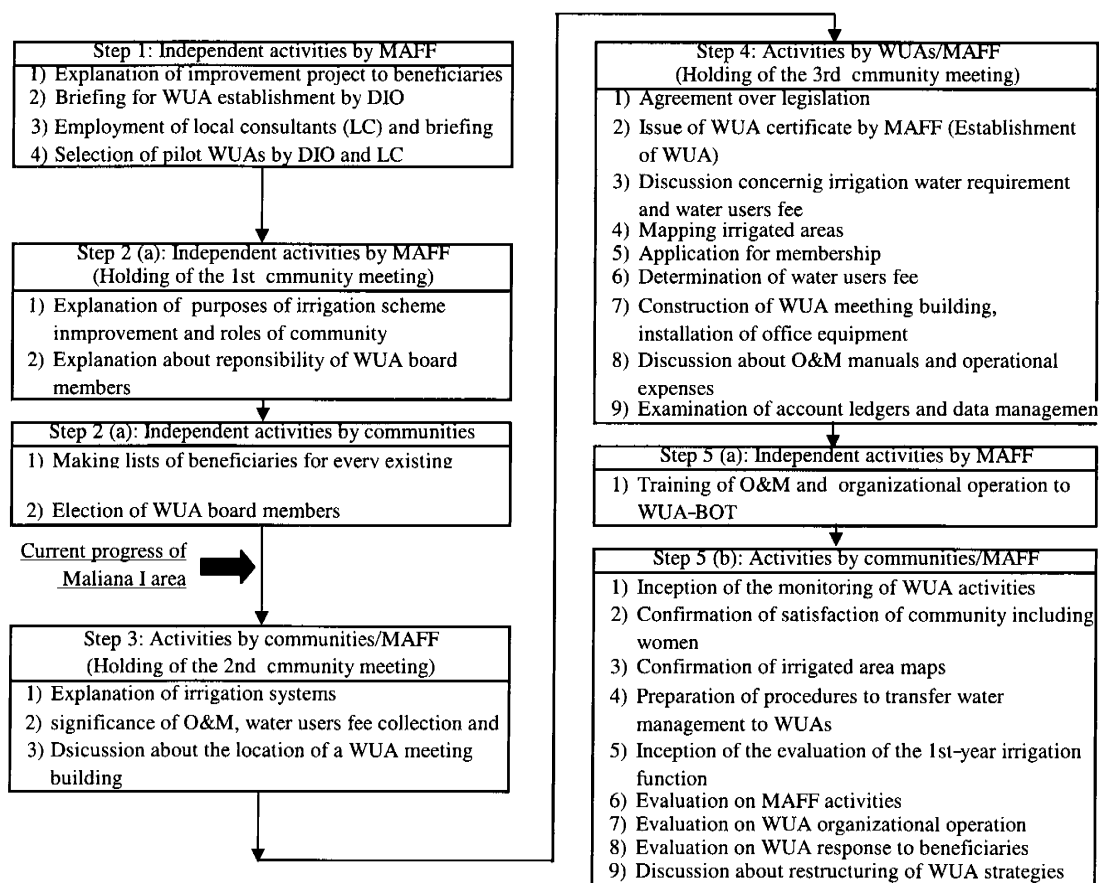


Figure 2-15 Process of establishments and strengthening of WUA proposed by WB (ARP3)

MAFF also intends to establish and strengthen WUA through this process in which progress has currently been made at the completing stage of the Step 2 (as of March 2006).

② Lessons learned from the emergency rehabilitation project of the Laclo Irrigation System

The emergency rehabilitation project of the Laclo irrigation system, implemented by UNOPS funded by Japan, started in November 2000, before the independence of Timor-Leste and ended in December 2003. The Project organized WUAs, strengthened the management capability and implemented trainings for gate operation by a WUA organization expert and an O&M expert.

However, it is pointed out that proper water management has not been executed because of 1) lack of consensus with beneficiaries attributable to prior incomplete prior explanation on the significance of establishing WUA, details of facilities, method of managing account and that operative function of gates has not been sufficient due to 2) insufficient practical training after the rehabilitation works, leading to failure of relevant water management.

(2) Necessity of Soft component plan

① Necessity of enlightenment activities on O/M of the facilities

Feeble concept of organizing WUA and poor awareness of own initiative to manage intake facility and O/M of the facilities among beneficiaries despite the completion of renovative works of irrigation facilities is considered stemming from the fact that most of the O/M cost had been borne by the government in Indonesian age. Hence, it's essential to explain and enlighten newly established WUA the function of rehabilitated irrigation facilities, principles of O/M, significance of managing WUA and benefits from the project, thus creating consensus at the earlier stage among the beneficiary people on the method of collecting (water user's) irrigation fee, the charged amount, system of managing organization and by-laws of WUA.

② Maintenance of facilities newly constructed and procured

- 1) The purposes of introducing new scouring sluice gate, intake gate are a) to remove the sediments in front of intake effectively, b) to reduce sediment inflow into sediment settling basin, c) to prevent sedimentation by excessive intake, d) to control the sedimentation inflow at flood (flood control). One of the objectives of constructing the gate is to mitigate the burden of the O&M of WUA. This is the reason why sufficient assistance for adequate instruction on gate operation for headworks and scouring sluice shall be required
- 2) Existing gates for sediment settling basin and for turnout to be refit have not been operational due to past inadequate maintenance, likely caused by lack of knowledge and information about O&M. Therefore, it is indispensable to instruct how to operate and manage each facility after rehabilitation.
- 3) In order to assure the effective water distribution of a limited amount of Bulobo River water to the command of beneficiaries, it is necessary to instruct proper water management conformed to planned irrigation rotation, which is going to be planned from now on, using new slide gates installed along main and secondary canals.

(3) Goal of Soft component

MAFF decided to reduce the disbursement of the subsidy to WUA to 30% of the required amount for O/M from the 6th year of facility management. In this regard, it is indispensable to verify the adequacy of the amount of water fee collected in the past and that of subsidy by MAFF by evaluating the state of activities of WUA after its

establishment and of O/M performances. If the new water fee's collection system begins to be applied from the 6th year, it may be necessary to agree with WUA on this application within the 5th year. It follows that evaluation for the previous 3 years must be carried out in the 4th year. By this reason, the target year is set at the 3rd year to attain the goal of soft component in compliance with the evaluation period described above. The contents of the goal to be fulfilled during three years after the completion of this Grant Aid scheme are as follows:

a) By soundly strengthened WUA b) by means of sustained collection of water fee and properly manage and maintain the irrigation facilities, c) efficient water intake / management is implemented.

Besides, understanding on WUA's organizational management and water management as well as capacity of instructing WUA will be improved provided that the contents of the activities are explained to the implementing organizations (MAFF, IWMD and Bobonaro agricultural office) during the process of technically assisting for soft component plan and instruction towards beneficiary people can be conducted through the leading role of the government implementing organizations.

(4) Contents and scale of the activities in Soft component

① Soft component activities (Input contents)

The activities required for achieving the effects (direct benefits) of the soft component is planned in Table 2-60.

Table 2-60 Effects and activities of the Soft component

Effect of the soft component (direct benefit)	Contents of required activities
(1) Disciplinary in terms of organizational management	
① Necessity of proper use and O/M of irrigation facilities is recognized and accepted	1) Interviewing on current stae of existing organizations with workshops to elucidate methods of O/M, water management, problems of water rotation and social conditions, 2) Definition and responsibility of WUA, significance of organizational management are explainmed to the beneficiaries through orientation and 3) WUA statutoruy manual (draft) is provided.
② Affordable amount of water (user's) fee and method of collection are established	1) An inquiry survey on the necessary amount of water fee to be collected is conducted, 2) Managing organization is grouped for tertiary canal construction, 3) PCM workshop for discussing method of collection and amount of water fee is held and 4) Workshop for instructing financial balance, deta management and method of accounting.
(2) Disciplinary in terms of water management	
① Gates installed at sediment scouring sluice, water intake, sediment settling basin and canal intake turnouts are properly operated in a linkage	1) Study tour is organized to visit Lacro irrigation scheme (4 WUA board members, 2 gate operators and other volunteers are assumed), 2) Operational field training on water management is conducted.
② Irrigation water is distributed to tertiary canals	1) Maps covering the entire irrigation perimeter and command under tertiary canals are drawn, 2) Problems on cropping and water rotation are extracted through workshop and water distribution plan is formulated, 3) Operational field training on water management is conducted.
③ Pragmatic water management manual available to WUA members is provided	1) Water management manual (draft) is provided, 2) Utilizing the manual (draft), adding revision by extracting problems on the said manual (draft) through the outcome of field training to complete water management manual.

Also, the process from the establishment to monitoring of WUAs is composed with the following steps.

- A. Preparation and basic agreement for WUA establishment,
- B. Setting working groups (WG) for WUA establishment,
- C. Election of WUA board members,
- D. Enlightenment to strengthen organizational management and of necessity of O/M (at D/D),
- E. Establishment of WUAs, completion of WUA bylaw manuals (at the beginning of rehabilitation works),
- F. Water management, understanding operation of gates and facilities, strengthening organization, developing ownership (during rehabilitation works),
- G. Field training (immediately after rehabilitation works), and
- H. Collection of water (user's) fee, monitoring, organizational improvement step of WUAs, according to the World Bank program.

The soft component plan of this project intends to include D (partly), F and G of the above steps. In this connection, a water management expert (Japanese consultant) for 2.3 MM and an organizational management expert (Local resource) for 2.0 MM, intotal 4.3 MM are planned for the input.

② Implementation schedule and input plan

The following figure shows implementation schedule and input plan. Soft component activities are planned at three stages after completing the election of board members of WUA (March 2006, already completed), namely, 1)at detailed design (D/D), 2)at the completion of O/M facilities and 3) when farmers begin irrigation immediately after the completion of improvement of the Maliana 1 irrigation system. The planned amount of inputs from Japan and Timor-Leste are 4.3 MM and 108.5 M/M, respectively.

Chapter 3 Project Evaluation and Recommendations

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3-1 Project Effect

3-1-1 Direct Effect

(1) Effect by the rehabilitation of the fixed weir at the raised but lost portion by 0.70 m damaged by flood

By rehabilitating the washed out portion (0.7 m) of Maliana I fixed weir by flood, direct effect is brought about by the improved state as compared to currently insufficient intake from the water source Bulobo River. As indicated in Table 3-1, the peak intake discharge during rainy season will be increased from 0.88 m³/sec to 1.37 m³/sec, or by 0.49 m³/sec.

Table 3-1 Increase in water intake discharge

	2005 (at present)	2009 (with Project)	<u>Effect indicator</u> : increase in maximum capacity of intake during rainy season
Peak intake discharge	0.88 m ³ /sec	1.37 m ³ /sec	0.49 m ³ /sec

(2) Effect by the implementation of the Soft component plan

Necessity of adequately managing, operating and maintaining irrigation facilities by WUA are recognized through the implementation of the soft component plan, thus acceptable amount and method of collecting water fee from the users in the first year are determined. Furthermore, gates installed at sediment scouring sluice, water intake, sediment settling basin and gates installed at turnouts are properly operated in a linkage and irrigation water is distributed to tertiary canals. In addition, it is expected that WUA members can avail the practical manual on water management. The direct achievement and what should be identified as the degree of achievement and means of identification are tabulated in Table 3-2. In this context, questionnaire surveys will be made towards the same WUA members (beneficiary households) with the same contents of inquiry sheets before and after the implementation of soft component plan, in order to identify the degree of the achieved performances through questionnaire survey.

Table 3-2 Purpose and effects of the Soft component plan

Purpose of the soft component (3 years after the expiry of the Project)	Performances of the soft component (at the completion of soft component activities)	Factor of identifying degree of performances	Measures to identify them (period and frequency)
(1) Disciplinary in terms of organizational management			
a) WUA is active and soundly functioning	① Necessity of proper management and O/M of irrigation facilities is recognized and accepted	• Degree of understanding of WUA members	Questionnaire: (twice, before and after soft component plan)
b) Water fee is regularly collected	② Affordable amount and method of water fee collection are established	• Degree of acceptance of WUA members	Questionnaire: (once, after soft component plan)
(2) Disciplinary in terms of water management			
c) Efficient water intake and water management are practiced	① Gates installed at sediment scouring sluice, water intake, sediment settling basin, canal intake turnouts are properly operated in a linkage	• Maturity of skill in operating gates by gate keepers / members	Operational identification: (before and after soft component plan)
	② Irrigation water is distributed up to the tertiary canals	• About 12km of the conveyance distance of new tertiary canals	Site confirmation (twice, just after constructing tertiary and after on-the-site training)

	③ Practical water management manual available to WUA members is provided	• Extent of satisfaction of WUA members	Questionnaire: (once, after soft component plan)
--	--	---	--

(3) Mitigation of labor burden on construction of masonry guide wall and removal of sediment

It is expected that the construction of scouring sluice by the Project enables to dispense construction of masonry guide wall that have been practiced by the beneficiary people three times a year, dredging works (the volume of flown-in boulder and gravel: 150 m³/year) and also occasional repairing works. Besides, labor of sediment evacuation will be eased by the rehabilitation replacement of sediment settling basin and the scouring sluice gate installed in the main canal, leading to expected alleviation of labor burden thereon.

3-1-2 Indirect Effect

Expansion of irrigation area for paddy by the increase of intake discharge

Table 3-3 Expansion of irrigation area for paddy by the increase of intake discharge

Irrigated paddy	2005(at present)		2009 (post-project)	
	Peak intake	irrigable area	Peak intake	irrigable area
Rainy season	0.88 m ³ /s* ¹⁾	600 ha	1.35 m ³ /s* ²⁾	1,050 ha
Dry season	about 0.23 m ³ /s* ³⁾	100 ha	0.34 m ³ /s* ²⁾	150 ha

Note : *1) actual measurement in main canals,

*2) planned design intake (not including intake for domestic water),

*3) estimated from unit water quantity at post-project stage.

3-1-3 Other Anticipated Effect

Assumed damage of collapse of the existing Aqueduct (Effect of renewal)

Provided that the current status continues without implementation of the Project, the scouring around bank protecting wall at the aqueduct will be progressed, increasing risk of eventual fall and collapse. If it fell down, irrigation water supply to the beneficiary command would completely be interrupted and the command cannot help relying on rainfed only. The proposed Project can obviate before it happens.

The annual amount of assumed damage is estimated at 204.2 thousand US\$ as shown in Table 3-4 by multiplying unit sale price to the actual production of irrigated paddy and irrigated upland crops.

Table 3-4 Amount of assumed annual damage caused by collapse of the existing Aqueduct

Rainy season crop		2005 (present state)				Amount of annual damage
		cropped area	unit yield	Production	Sale price * ¹⁾	
	Irrigated paddy	600 ha	2.1 t/ha	1,260 ton	120 US\$/ton	151.2 thousand US\$/year
	Irrigated paddy	100 ha	1.5 t/ha	150 ton	120 US\$/ton	18.0 thousand US\$/year
	Irrigated upland	100 ha	1.4 t/ha	140 ton	250 US\$/ton	35.0 thousand US\$/year
Total						204.2 thousand US\$/year

Remarks : *1) Sale price referred to is purchasing price by ASC

3-2 Recommendations

According to "Policy for WUA and O/M of irrigation facilities (draft)" by MAFF, operation and management of newly constructed or rehabilitated irrigation facilities are basically transferred to the beneficiaries thereof. Also, this Policy stipulates obligated establishment of WUA, to which the rehabilitated irrigation facilities are completely handed over from MAFF after the 11th year of post-rehabilitation. To ensure the transfer, MAFF is requested, also in this project, not only to provide support and monitor for the beneficiaries during the stage of establishing WUA and the transitional period, but also to urge members of WUA to determine the annual water fee necessary for proper O/M and management of the rehabilitated irrigation facilities, that is affordable for the members to continue payment.

The average amount of water user's fee to be collected for the initial 5 years is estimated at 5 US\$/ha/year, from the calculation of O/M cost for the period 1) during the initial 5 years just after the rehabilitation with a subsidy at the rate of 70%, 2) during the next 5 years with a subsidy at 30% and 3) during the period after 11th year without subsidy, according to this policy (draft). In January 2006, MAFF held a workshop at Maliana I irrigation area inviting 5 village chiefs and some group leaders to explain to 1) support the establishment of WUA and to monitor the activities of WUA, 2) to help them by granting subsidy of MAFF for the O/M cost after rehabilitating the facilities. After the explanation, MAFF asked the participants their willingness to pay water user's fee at the initial stage. After the consultation with them, MAFF obtained their reply that "they can afford to pay about 5 US\$ in the initial stage". From this result, it was judged that the collection of imposed water user's fee is concluded feasible.

Also, MAFF explained to the participants that even after the granting of subsidy is expired during the period after the 11th year when O/M of the facilities are handed over to WUA, MAFF will be responsible for the support for coping with heavier damages of intake facilities. It means that MAFF will collaborate with WUA in O/M by giving necessary support even after the rehabilitation. However, in the case where subsidy is not applied by MAFF, the amount of water user's fee to be collected will become around 17 US\$ / ha / year during the initial 5 years, then the amount is far from acceptable by the beneficiary users who do not have any experience of paying water cost.

Therefore, in so far as Timor-Leste observes the above-mentioned Policy (draft), and entrusts WUA to properly manage, operate and maintain irrigation facilities, the realization of strengthening of managerial capacity of WUA and sustainable collection of water user's fee are indispensable. This is why MAFF is requested to pledge support and monitoring for WUA, the granting of subsidy after the rehabilitating facilities, also to explain the methods of these aids to the beneficiaries of the facilities.

Appendices

Appendix-1: Member List of the Study Team

Appendix-2: Study Schedule

Appendix-3: List of Parties Concerned in Timor-Leste

Appendix-4: Minutes of Discussions

Appendix-5: Other Relevant Data

Appendix-1 Member List of the Study Team

1-1 Study Team of Basic Design Study

Name	Responsibility	Position
1. Mr. Kyojin MIMA	Leader	Group Director, Project Management Group III, Grant Aid Management Department, Japan International Cooperation Agency (JICA)
2. Mr. Kazumitsu TSUMURA	Chief Consultant /Irrigation Facility Planning	Manager, Project Operation Division, International Department, Sanyu Consultants Inc. (SCI)
3. Mr. Fumihiko KOMADA	Farming /Water Management /Operation and Management Planning	Technical Advisor, Project Operation Division, International Department, SCI
4. Mr. Masanori MARUKAWA	Cost Estimation /Procurement /Construction Planning	Technical Advisor, Project Operation Division, International Department, SCI
5. Mr. Yusuke MARUNO	Coordinator /Strengthening Water Users Association (WUA)	Project Operation Division, International Department, SCI

1-2 Study Team for Explanation of Draft Basic Design Report

Name	Responsibility	Position
1. Mr. Tetsuya KAMIJO	Leader	Resident Representative of JICA Timor-Leste Office
2. Mr. Takeyuki OYA	Project Coordination	Rural Development Team, Project Management Group III, Grant Aid Management Department, JICA
3. Mr. Kazumitsu TSUMURA	Chief Consultant /Irrigation Facility Planning	Manager, Project Operation Division, International Department, Sanyu Consultants Inc.

Appendix-2 Study Schedule

2-1 Basic Design Study

Date	day	Kyojin Mima: Leader (JICA)	Kazumitsu Tsumura: Chief Consultant /Irrigation Facility Planning	Fumihiko Komada: Farming /Water Management, O/M Planning	Yusuke Maruno: Coordinator /Strengthening WUA	Masanori Narukawa: Cost estimation /Procurement /Construction planning	
1-Mar	Tue		1. Departure at Narita(16:00)(JL729) →Arrive at Denpasar(22:25)	Departure at Kanku(14:40)(JL713)→Arive at Denpasaal(20:35)	Departure at Narita(JL729)→ Arrive at Denpasar		
2-Mar	Wed		2. Departure at Denpasar (09:10)(MZ848)→Arrive at Dili (12:00) JICA Office in Timor Leste, courtesy call to Embassy of Japan				
3-Mar	Thu		3. Visit to Irrigation Water Management Division (IWMD) for preliminary explanation of Ic/Report etc.	Preparation of entrust contract surveys, staff arrangement for workshop, baseline survey			
4-Mar	Fri		4. Confirmation of background and project purpose, preparation of site survey	O/M survey, preparation of staff arrangement for workshop, baseline survey	Preparation of entrust contract surveys, staff arrangement for workshop, baseline survey		
5-Mar	Sat		5. Confirmation on contents of request, Trend of other donors, Preparation of entrust contract surveys	Survey for O/M preparation of staff arrangement for workshop, baseline survey	Preparation of entrust contract surveys, staff arrangement for workshop, baseline survey		
6-Mar	Sun		6. Analysis of collected data				1. Departure at Narita(16:00)(JL729)→Arrive at Denpasaal(22:25)
7-Mar	Mon		7. Tender for entrust contract surveys, Preparation for workshop, baseline survey				2. Departure at Denpasar(MZ848) →arrive at Dili
8-Mar	Tue		8. Identification on content of request, Trend of other donors, Signing of entrust contract survey	Survey for farming plan, Preperation for Baseline survey	Preparation of baseline survey, Presence of signing of entrust contract survey		3. Data and information collection on estimation and procurement
9-Mar	Wed	1. Departure at Narita(JL729)→Arrive at Denpasar	9. Identification on content of request, Trend of other donors,	Move (from Dili to Maliana) Reconnaissance survey at Maliana I		4. Move (from Dili to Maliana) Reconnaissance survey at site	
10-Mar	Thu	2. Departure at Denpasar(MZ848)→ Arrive at Dili, Meeting with JICA Expert Mr. Tanabe, coutesy call to Embassy of Japan (Ambassador)	10. Meeting with JICA Expert Mr. Tanabe, coutesy call to Embassy of Japan (Ambassador)	Reconnaissance survey at Maliana I	Baseline survey at Maliana I	5. Reconnaissance survey at site	
11-Mar	Fri	3. Courtesy call to MAFF(Vice Minister) explanation and discussion on Ic/Report at IWMD, courtesy call to Ministry of Finace	11. Courtesy call to MAFF(Vice Minister) explanation and discussion on Ic/Report at IWMD, courtesy call to Ministry of Finace	Reconnaissance survey at Maliana I	Baseline survey at Maliana I	6. Survey for Construction planning	
12-Mar	Sat	4. Move (from Dili to Maliana) Reconnaissance survey at Maliana I	12. Move (from Dili to Maliana) Reconnaissance survey at Maliana I	Reconnaissance survey at Maliana I	Baseline survey at Maliana I	7. Survey for Construction planning	
13-Mar	Sun	5. Internal Meeting Move (from Maliana to Dili)	13. Internal Meeting Move (from Maliana to Dili)	Internal Meeting		8. Internal Meeting Move (from Maliana to Dili)	
14-Mar	Mon	6. Discussion on Minutes	14. Discussion on Minutes	Baseline survey at Maliana I		9. Discussion on Minutes	
15-Mar	Tue	7. Signing on Minutes (MAFF Vice Minister), Report to JICA office and Embassy of Japan	15. Signing on Minutes (MAFF Vice Minister), Report to JICA office and Embassy of Japan	Baseline survey at Maliana I		10. Signing on minutes (MAFF Vice Minister), Report to JICA office and Embassy of Japan	
16-Mar	Wed	8. Departure at Dili (12:45)(MZ849)→ Arrival at Denpasar(13:40), Leaving Denpasar (23:55) (JL720)	16. Move (from Dili to Maliana) Reconnaissance survey at Maliana I	Preparation for workshop		11. Move (from Dili to Maliana) Reconnaissance survey at Maliana I	
17-Mar	Thu	9. →Arrival at Narita (07:35)	17. Holding workshop			12. Holding workshop	
18-Mar	Fri		18. Survey for irrigation facility	Survey for farming plan	Baseline survey at Maliana I	13. Identification on land acquisition and temporary construction site	
19-Mar	Sat		19. Survey for irrigation facility	Survey for farming plan	Baseline survey at Maliana I	14. Identification on land acquisition and temporary construction site	
20-Mar	Sun		20. Analysis of collected data and documentation			15. Move (from Maliana to Dili)	
21-Mar	Mon		21. Environmental Impat Assessment study etc., Facility plan survey	Survey on farming plan, water management, strengthening WUA	Survey on strengthening WUA	16. Survey for Cost estimation and procurement	
22-Mar	Tue		22. Environmental Impat Assessment study etc., Facility plan survey	O/M and maintenance plan survey	Survey on strengthening WUA	17. Survey for Cost estimation and procurement	
23-Mar	Wed		23. Survey on irrigation facility plan	Move (from Maliana to Dili) Drafting of site survey report	Survey on strengthening WUA	18. Survey for Cost estimation and procurement	
24-Mar	Thu		24. Move (from Maliana to Dili) Preparation of site survey report	Survey for O/M plan	Shift (from Maliana to Dili) Preparation of site survey report	19. Survey for Cost estimation and procurement	
25-Mar	Fri		25. Preparation of report on the result of site survey			20. Preparation of report on the result of site survey	
26-Mar	Sat		26. Preparation of report on the result of site survey			21. Preparation of report on the result of site survey	
27-Mar	Sun		27. Preparation of report on the result of site survey			22. Preparation of report on the result of site survey	
28-Mar	Mon		28. Discussion with IWMD, report to JICA office, Embassy of Japan and related agencies			23. Discussion with IWMD, report to JICA office, EOJ and related agencies, departure at Dili (MZ849)→arrival at Denpasar, departure at Denpasar	
29-Mar	Tue		29. Departure at Dili (12:45)(MZ849)→Arrival at Denpasar(13:40), Departure at Denpasar (23:55) (JL720)			24. →Arrival at Narita	
30-Mar	Wed		30. →Arrival at Narita (07:35)				

2-2 Overall Basic Design Study

Date	day	Tetsuya Kamijo: Leader, Resident Representative of JICA Timor-Leste Office	Takeyuki Oya: Project Coordination (JICA)	Kazumitsu Tsumura: Chief Consultant /Irrigation Facility Planning
8-Jan	Sun		1. Departure at Narita(15:55)(JL729) →Arrival at Denpasar(22:25)	1. Departure at Narita(15:55)(JL729) →Arrival at Denpasar(22:25)
9-Jan	Mon	1. Meeting at JICA office, courtesy call to Embassy of Japan	2. Departure at Denpasar (09:10)(MZ8480)→ Arrival at Dili(12:00), Meeting at JICA office, courtesy call to Embassy of Japan in Timor Leste	2. Departure at Denpasar (09:10)(MZ8480)→ Arrival at Dili(12:00), Meeting at JICA office, courtesy call to Embassy of Japan in Timor Leste
10-Jan	Tue	2. Meeting director of IWMD, Move (Dili→Maliana) Site survey, Move(Maliana→Dili)	3. Meeting director of IWMD, Move (Dili→Maliana) Site survey, Move(Maliana→Dili)	3. Meeting director of IWMD, Move (Dili→Maliana) Site survey, Move(Maliana→Dili)
11-Jan	Wed	3. Meeting director of Irrigation and Water Management Division (IWMD) for explanation and discussion of DBD and Minutes etc., Meeting SSECTOPD regarding on Environmental procedure	4. Meeting director of Irrigation and Water Management Division (IWMD) for explanation and discussion of DBD and minutes etc., Meeting SSECTOPD regarding on Environmental procedure	4. Meeting director of Irrigation and Water Management Division (IWMD) for explanation and discussion of DBD and minutes etc., Meeting SSECTOPD regarding on Environmental procedure
12-Jan	Thu	4. Courtesy call to Ministry of Finance Planning to explain minutes,courtesy call to MAFF (Minister and experts), explanation of Minutes	5. Courtesy call to Ministry of Finance Planning to explain minutes,courtesy call to MAFF (Minister and experts), explanation of Minutes	5. Courtesy call to Ministry of Finance Planning to explain minutes,courtesy call to MAFF (Minister and experts), explanation of minutes
13-Jan	Fri	5. Discussion on the minutes and signing, Report to JICA office and to Embassy of Japan in Timor-Leste	6. Discussion on the minutes and signing, Report to JICA office and to Embassy of Japan in Timor-Leste	6. Discussion on the Minutes and signing, Report to JICA office and to Embassy of Japan in Timor-Leste, Move (Dili to Maliana)
14-Jan	Sat		7. Departure atDili(12:45)(MZ8490)→arrival at Denpasaal(13:40), departure at Denpasar (23:25) (JL726)	7. Holding workshop Move (Maliana→Dili)
15-Jan	Sun		8. →Arrival at Narita (07:05)	8. Depaerture at Dili(12:45)(MZ8490)→Arrival at Denpasaal(13:40), departure at Denpasar (23:25) (JL726)
16-Jan	月			9. →Arrival at Narita (07:05)

Appendix-3 List of Parties Concerned in Timor-Leste

No.	Name	Position
Ministry of Agriculture, Forestry and Fisheries (MAFF)		
1.	Mr. Francisco de Sa Benevides	Vice-Minister
2.	Mr. Cesar Jose da Cruz	Secretario Permanente (General director)
3.	Mr. Ir. Deolindo da Silva	Director of Agriculture and Livestock
4.	Mr. Sinobu Sakai	Expert (Irrigation and WUA advisor)
5.	Mr. Adrelfredo	District Irrigation Officer of Region III
6.	Mr. Arcanjo da Silva	Agriculture Policy Planning
Ministry of Planning and Finance		
1.	Ms. Aicha Bassarewan	Vice-Minister
2.	Mr. Eusebio Jeronimo	Director of Planning and External Assistance Management Division
3.	Mr. Takashi Watanabe	Advisor, National Directorate for Planning and External Assistance Coordination Division
Irrigation and Water Management Division (IWMD)		
1.	Mr. Florindo Barreto	Director of Irrigation and Water Management Division
2.	Mr. Martinho L. Soares	Head of Irrigation Planning
3.	Mr. Agostinho S. Guterres	Sector Beans and Root Crop, Crop Production, RDTL
4.	Mr. Pedro Vital	District Irrigation Officer, Manatuto
5.	Mr. James Oliver Oduic	Irrigation Adviser
6.	Mr. Tatsumi Tanabe	Advisor for Irrigation and Water User Association
7.	Ms. Joki Van Brick	Water User's Association Advisor
Secretary State for Environment Coordination, Territorial Ordering and Physical Development (SSECTOPD)		
1.	Mr. Carlos Ximenes	Director of National Directorate Environment
2.	Mr. Vasco Leitao	Advisor of EIA and Pollution Control
Bobonaro Office of MAFF		
1.	Mr. Eugenio Borges	District Agriculture Coordinator (DAC), Bobonaro
2.	Mr. Alfredo Soares	District Irrigation Officer (DIO), Bobonaro
3.	Mr. Celestino Henrigue	District Irrigation Officer (DIO), Bobonaro
4.	Mr. Rui Manuel Lasi	Local Consultant for WUA Bobonaro
5.	Mr. Carlos Soares Araujo	Guard Forestry
6.	Mr. Guilherme Da Costa	District Livestock Officer

Bobonaro District Administration Office		
1.	Mr. Leonel de Jesus Carvalho	District Administrator (DA), Bobonaro
2.	Mr. Arcanjo R. Tilman	District Development Officer (DDO), Bobonaro
3.	Mr. Semedu Lacu Costa	In charge of Infrastructure
Maliana Sub-District Administration Office		
1.	Mr. Domingos Martins	Administrator Sub-District Maliana
2.	Mr. Alcino Pires	Government Local Officer
3.	Mr. Aligio Moniz	Community Development Officer (CDO)
Bobonaro District Hygiene Service Office		
1.	Mr. Guilhormino da Cruz	Manager, Water and Sanitation Services
2.	Mr. Alcino Pires	Government Local Officer
NGO, World Vision		
1.	Mr. Chris Walsh	Food Security Officer
2.	Mr. Ceasar Bautista	Operation Manager
3.	Mr. Venacio Ximenes	Agriculture Coordinator
4.	Mr. Nuno Tolentio	Fish Program Coordinator
5.	Mr. Fernando Cardoso	ANCP (Australian NGO Corporation program) Supervisor
6.	Mr. Helder Dos Santos	ADP (Area Development Program)
7.	Mr. Olga Sacdanha	ANCP Staff
8.	Mr. Dos Santos	Maliana Office
Embassy of Japan in Timor Leste		
1.	Mr. Hideaki Asahi	Ambassador
2.	Mr. Akinori Wada	Councilor (at the Basic Design Study)
3.	Mr. Akira Koizumi	Councilor (at the explanation of the DBD)
4.	Mr. Kanako Nozawa	Second Secretary
JICA Timor-Leste Office		
1.	Mr. Toshiaki Tanaka	Resident representative (at the Basic Design Study)
2.	Mr. Tetsuya Kamijo	Resident representative (at the explanation of the DBD)
3.	Mr. Masayoshi Kimura	Staff (in charge of agricultural development)
4.	Ms. Yuki Kuraoka	Staff
5.	Mr. Jong Robin	Program Officer
Manatuto District Paddy Irrigation Project		
1.	Mr. Michihiko Sakaki	Chief advisor
2.	Mr. Naoto Watanabe	Expert

Appendix-4 Minutes of Discussions

Appendix 4-1 Minutes of Discussion on the Basic Design Study on the Project for Rehabilitation and Improvement of Maliana I Irrigation System in the Demographic Republic of Timor-Leste (March 15, 2005)	A4-2
Appendix 4-2 Minutes of Discussion on the Basic Design Study on the Project for Rehabilitation and Improvement of Maliana I Irrigation System in the Demographic Republic of Timor-Leste (Explanation on Draft BD Report) (January 13, 2006)	A4-14

MINUTES OF DISCUSSION
ON
THE BASIC DESIGN STUDY
ON
THE PROJECT FOR REHABILITATION AND IMPROVEMENT
OF
MALIANA I IRRIGATION SYSTEM
IN
THE DEMOCRATIC REPUBLIC OF TIMOR-LESTE

Based on the requests by the Government of the Democratic Republic of Timor-Leste (hereinafter referred to as "Timor-Leste"), the Government of Japan decided to conduct a Basic Design Study on the Project for Rehabilitation and Improvement of Maliana I Irrigation System (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA")

JICA sent to Timor-Leste the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Kyojin MIMA, Group Director of Project Management Group II, Grant Aid Management Department, JICA and is scheduled to stay in the country from March 2 to March 29, 2005.

The Team held a series of discussion with the officials concerned of the Government of Timor-Leste and conducted a field survey at the study area. In the course of discussion and field survey, both sides confirmed the main items as described on the attached sheets. The Team will proceed to further works and report the findings to the Government of Japan.

Dili, March 15, 2005



Mr. Kyojin MIMA

Leader

Basic Design Study Team

Japan International Cooperation agency



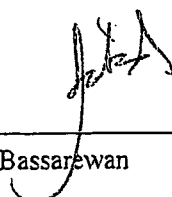
Mr. Francisco de Sá Benevides

Vice-Minister

Ministry of Agriculture, Forestry and Fisheries

Democratic Republic of Timor-Leste

Witness



Ms. Aicha Bassarewan

Vice-Minister

Ministry of Planning and Finance

Democratic Republic of Timor-Leste

ATTACHMENT

1. Objective

The objective of the Project is to distribute stable irrigation water to the Maliana I Irrigation area through rehabilitating Maliana I intake weir and irrigation canals and constructing related facilities.

2. Project Site

The Project site is located about 150 km western from Dili in Maliana sub-district of Bobonaro district as shown in Annex-1.

3. Responsible and Implementation Agency

Irrigation and Water Management Division (hereinafter referred to as "IWMD") of Agriculture and Livestock Department (hereinafter referred to as "ALD") of Ministry of Agriculture, Forestry and Fisheries (hereinafter referred to as "MAFF") is responsible for the administration and implementation of the Project. The organization charts of MAFF and IWMD are shown in Annex-2 and Annex-3 respectively

4. Components requested by Timor-Leste side

After discussion with the Team, Timor-Leste side explained the revised requested components (including technical supports) described in Annex-4. Main items of the Japan's Grant Aid requested by Timor-Leste side were confirmed as follows. JICA will assess the appropriateness of the request and will report the finding to the Government of Japan. The final components of the Project will be decided after the Basic Design Study (hereinafter referred to as "the Study").

(1) Rehabilitation

- 1) Raising the existing weir crest by appropriate height and attaching sand sluiceway, if necessary,
- 2) Grouting of the foundation of the existing weir,
- 3) Raising of the abutments training walls upstream of the crest with reinforced concrete,
- 4) Repairs on the concrete of the existing intake and sedimentation basin,
- 5) De-silting of the existing canals,
- 6) Repair canal lining and structure,
- 7) Rehabilitation of retaining walls for aqueduct bridge.

(2) New construction

- 1) Installation of new gates for intake, sluice outlet of sediment basin and canal intake,
- 2) Installation of steel slide gates at the division structure of Maliana I main canal and other offtake structures,
- 3) Construction and extension of the Ramaskora secondary canal,
- 4) Extension of the Ritabou secondary canal,
- 5) Construction of meeting place for the Water Users' Association (WUA),
- 6) Construction of the water guards house,
- 7) Construction of a storage shed,

8) Construction of a drying floor.

(3) Others

Strengthening of the WUA.

5. Japan's Grant Aid System

- (1) The government of Timor-Leste has understood the system of Japan's Grant Aid explained by the Team as described in Annex-5.
- (2) The Timor-Leste side will take necessary measures described in Annex-6 for smooth implementation of the Project on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Schedule of the Study

- (1) The Team will proceed to further studies in Timor-Leste until March 29, 2005.
- (2) JICA will prepare a draft report in English and dispatch a mission in order to explain its contents around June 2005. The draft report will be sent to the Timor-Leste side one(1) week before the mission is dispatched.
- (3) In the case that the contents of the report are accepted in principle by the Timor-Leste side, JICA will complete the final report and send it to Timor-Leste by the end of August 2005.

7. Other Relevant Issues

- (1) Both sides confirmed the title of the Project such as "the Project for Rehabilitation and Improvement of Maliana I Irrigation System" instead of "the Project for Maliana I Irrigation Rehabilitation".
- (2) Both sides confirmed the Project was identified for one of the priority projects described as "Improve cropping efficiency under irrigation" in the "Table 1: Priority Ranking of Proposed New Programs for the Agricultural and Livestock Sector" of the clause, namely; Program Priorities and Intersectoral Linkages of the Chapter IV "KEY PROGRAMS FOR THE MEDIUM TERM" of Part A of "AGRICULTURE, FORESTRY AND FISHERIES PRIORITIES AND PROPOSED SECTOR INVESTMENT PROGRAM" issued in 2005.
- (3) The Team explained the importance of security for the persons concerned with the Project in order to implement the Basic Design Study and the Project. The Timor-Leste side understood that and expressed to take necessary measures for the subsequent studies.
- (4) The Timor-Leste side requested to involve additional area with about 150 ha for target irrigation area under the Project, located at downstream of Ritabaou secondary canal with length of about 1.7 km by extending the said secondary canal and also Ramaskora irrigation canal with length of about 1.6 km.

The Team expressed that the target irrigation area should be decided by analyzing relevant data and information through the Study, such as availability of water source in the Bulobo river and present cropping pattern, and by examining the alternatives of height and material of raising Maliana I intake weir with attaching sand sluice gate and so on.

And the Timor-Leste side understood the above situations.

(5) Both sides confirmed benefits under the Project as follows;

- To distribute stable irrigation water to the Maliana I Irrigation area in rainy season,
- To extend the Maliana I Irrigation area in dry season.

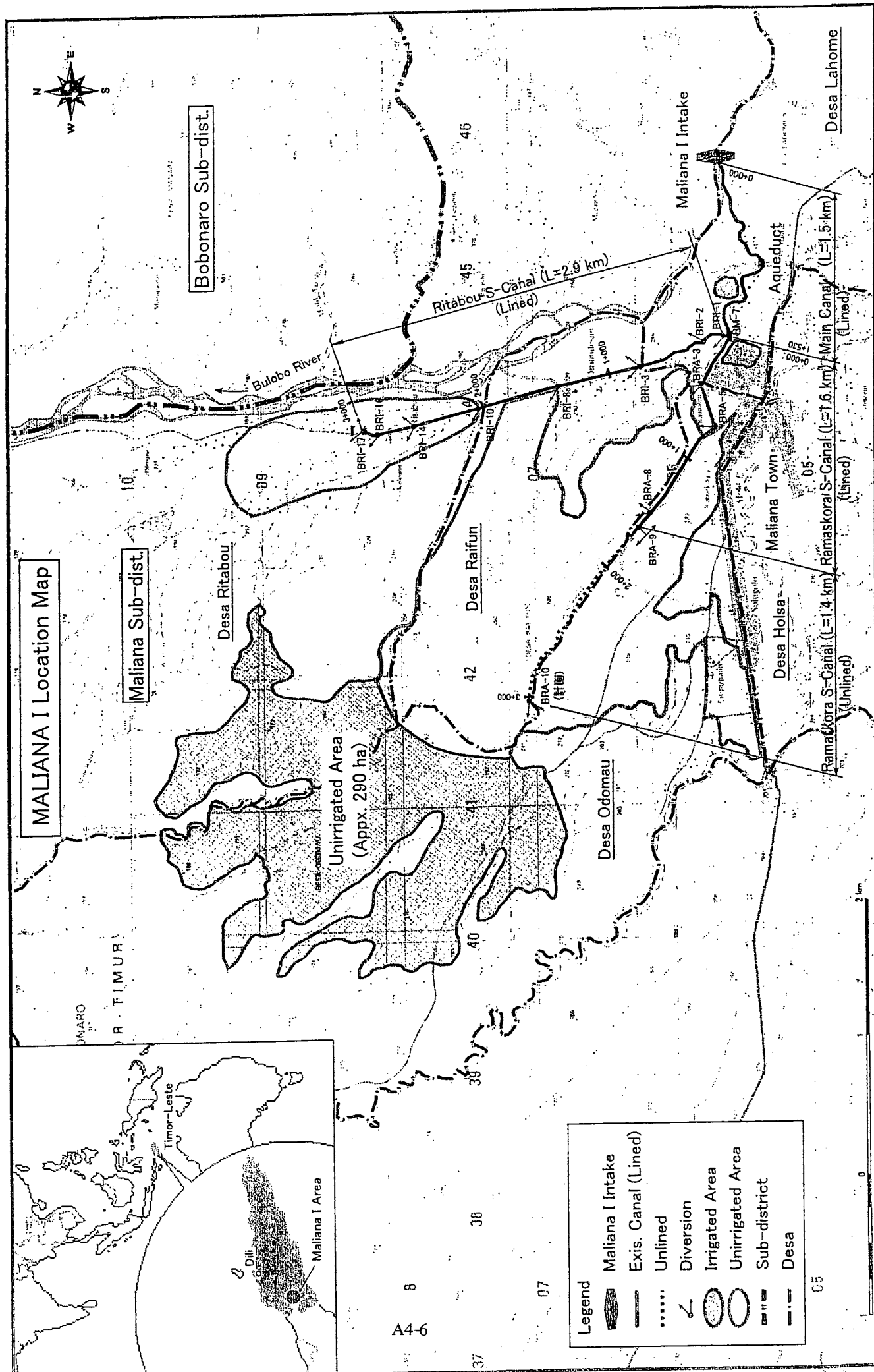
And both sides identified the tentative irrigation areas and target beneficiaries as follows;

Name of Village	Irrigation Area (ha)	Number of Household (HH)
1) Lahomea	35	18
2) Raifun	230	115
3) Ritabou	290	145
4) Odomau	325	162
5) Holsa	20	10
Total	900	450

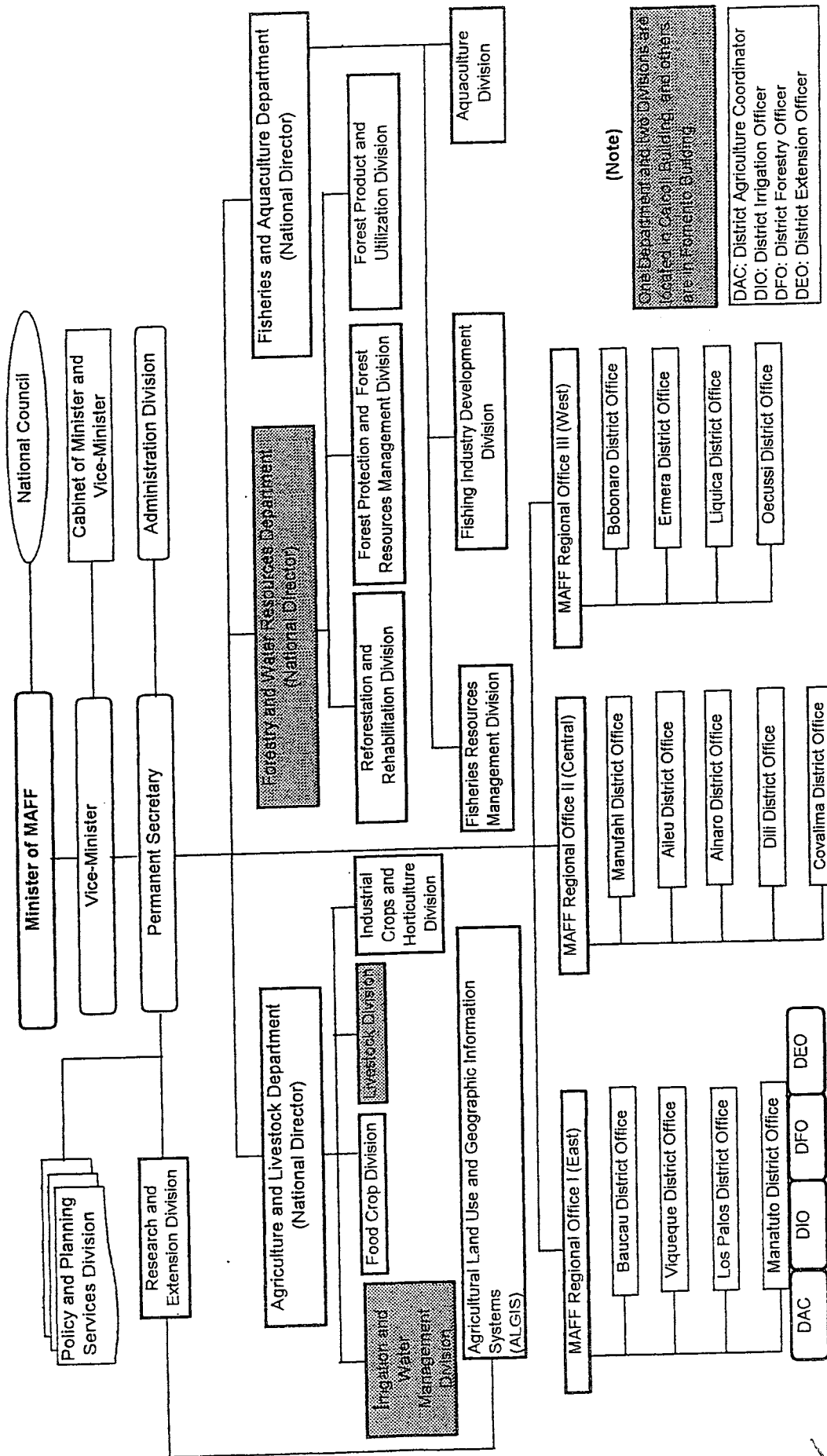
Remarks: Numbers of HH are estimated by average land landholding of 2 ha/HH.

Both sides, furthermore, agreed that actual benefits and target beneficiaries in rainy season and dry season respectively would be examined by the Study in consideration with the above Clause (4).

- (6) MAFF agreed to confirm present status on activation of the Environmental laws in Timor-Leste and necessary procedure of conducting the Environmental Impact Assessment (EIA), and also to have responsibility to conduct EIA by December 2005, if necessary.
- (7) Both sides confirmed the necessary lands for acquisition for expanding width of main canal and extending secondary canals and so on in the Project area, would be identified by the end of the Study. And the Timor-Leste side agreed to hand basic agreement of land acquisition with beneficiaries to the Team by the end of May 2005.
- (8) The Team emphasized that the importance of constructing tertiary canals and field canals to assure more effective use of irrigation water under the Project which were not included in the components of the request by the Timor-Leste side. The Timor-Leste side agreed to undertake to construct the said canals.
- (9) The both sides confirmed that soft component for establishing and strengthening water users' association for sustainability of the Project would be proposed during the Study, if necessary. And the Timor-Leste side agreed to make efforts for providing their staff for necessary arrangements, if the soft component would be proposed.
- (10) After discussing at the Project site, the both sides confirmed beneficiaries from intake located at right bank of Maliana I weir are not under the Project.
- (11) After discussing at the Project site, the Timor-Leste side agreed to confirm schedule of rehabilitation and its proposed capacity of water supply facility, taking water from main canal of the Project with Ministry of Transport, Communication and Public Works (MTCPW) by the end of March.
- (12) After discussing at the Project site, the Timor-Leste side agreed to take necessary actions to reduce water leakage from the aqueduct bridge by temporary measure during water closure.
- (13) Both sides confirmed that the approval of the Project would be depended on the decision by the Government of Japan.

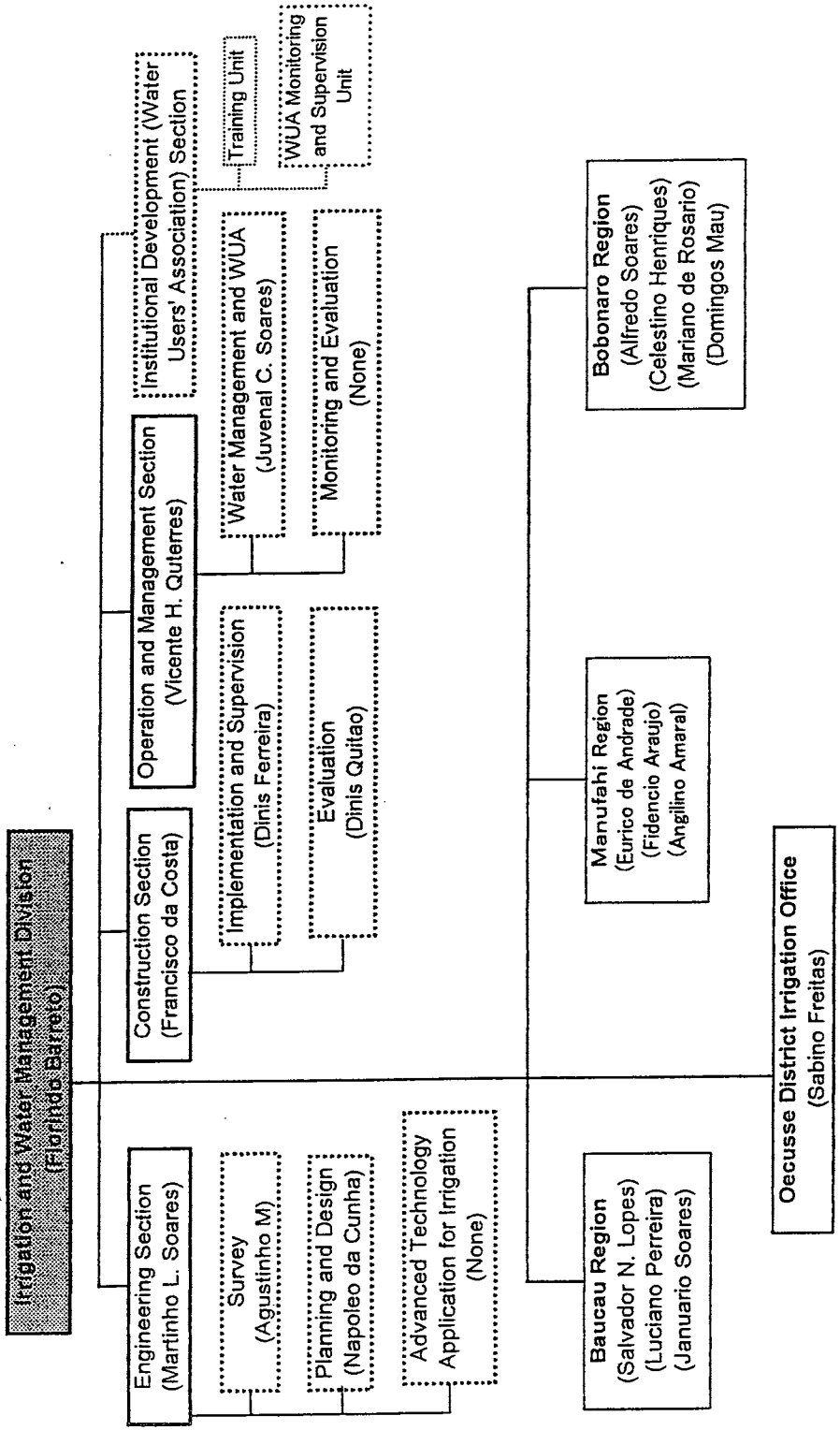


Annex-2 Present Organization Structure of Ministry of Agriculture, Forestry and Fisheries
(As of January 2005)



(See note on the left)

Annex-3 Organization Structure of Irrigation and Water Management Division, MAFF
(As of January 2005)



Note: The functions and deployment of the staff of the section and sub-sections shown with dot lines may subject to change.

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Revised Items from the Original Components Request by the Government of Timor-Leste

(Remarks: Underlines are showing the revised items)

Original Requested Components	Revised Requested Components
1. Rehabilitation	
1) To raise the existing weir crest by 0.7 m by anchoring a capping of concrete with steel plates armoured to the downstream face of the weir,	1) Raising the existing weir crest by <u>appropriate height and attaching sand sluiceway, if necessary.</u>
2) Grouting of the foundation of the existing weir,	2) Grouting of the foundation of the existing weir,
3) Raising of the abutments training walls upstream of the crest with reinforced concrete,	3) Raising of the abutments training walls upstream of the crest with reinforced concrete,
4) Repairs on the concrete of the existing intake and sedimentation basin,	4) Repairs on the concrete of the existing intake and sedimentation basin,
5) De-silting of the existing canals,	5) De-silting of the existing canals,
6) Repair canal lining and structure.	6) Repair canal lining and structure,
7) -	7) <u>Rehabilitation of retaining walls for aqueduct bridge.</u>
2. New Construction	
1) Instillation of new gates for the sluice outlet and canal intake,	1) Installation of new gates for <u>intake</u> , sluice outlet of sediment basin and canal intake,
2) Instillation of steel slide gates at the division structure of Maliana I main canal and other offtake structures,	2) Installation of steel slide gates at the division structure of Maliana I main canal and other offtake structures,
3) Construction of the Ramaskora secondary canal,	3) Construction <u>and extension</u> of the Ramaskora secondary canal,
4)	4) <u>Extension of the Ritabou secondary canal,</u>
5) Construction of meeting place for the water users association (WUA),	5) Construction of meeting place for the water users association (WUA),
6) Construction of the water guards house,	6) Construction of the water guards house,
7) Construction of a storage shed,	7) Construction of a storage shed,
8) Construction of a drying floor.	8) Construction of a drying floor.
3. Others	
1) Strengthening of the WUA.	1) Strengthening of the WUA.

Japan's Grant Aid

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japan's Grant Aid Scheme is executed through the following procedures:

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for the Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using a Japanese consulting firm.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

(1) Contents of the Study

The aim of the Basic Design Study (hereafter referred to as "the Study"), conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation,
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view,
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project,
- Preparation of a Basic Design of the Project,
- Estimation of cost of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Study, JICA uses registered consulting firms. JICA selects firms based on proposals submitted by interested firms. The firms selected carry out a Basic Design Study and writes reports, based upon terms of reference set by JICA.

The consulting firm used for the Study is recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

(1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

- (2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with consulting firm and (a) contractor(s) and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

- (3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely, consulting constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(4) Necessary of "Verification"

The Government of recipient country or its designated authority will concluded contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(5) Undertakings required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction,
- b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

- c) To secure buildings prior to the procurement in case the installation of the equipment,
- d) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(6) "Proper Use"

The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the side when needed		●
3	To construct gates and fences in and around the site		●
4	To construct the parking lot		●
5	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6	To construct the building	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (from storm sewer and other to the site)		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	5) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9	To ensure unloading and customs clearance at port disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan the recipient	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10	To accord Japanese nationals, whose service may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		●
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay)

MINUTES OF DISCUSSION
ON
THE BASIC DESIGN STUDY
ON
PROJECT FOR THE REHABILITATION AND IMPROVEMENT OF MALIANA I IRRIGATION
SYSTEM
IN
THE DEMOCRATIC REPUBLIC OF TIMOR-LESTE
(EXPLANATION ON DRAFT REPORT)

In March 2005, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on Project for the Rehabilitation and Improvement of Maliana I Irrigation System (hereinafter referred to as "the Project") to the Democratic Republic of Timor-Leste (hereinafter referred to as "Timor-Leste"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

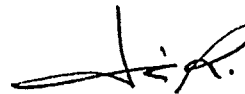
In order to explain and to consult Timor-Leste on the components of the draft report, JICA sent to Timor-Leste the Draft Report Explanation Team (hereinafter referred to as "the Team"), which was headed by Mr. Tetsuya KAMIJO, Resident Representative, JICA Timor-Leste Office and was scheduled to stay in the country from 9th to 14th January, 2006.

As a result of discussion, both parties confirmed the main items described on the attached sheets.

Dili, January 13, 2006



Mr. Tetsuya KAMIJO
Resident Representative
Japan International Cooperation Agency
Timor-Leste Office



Mr. Francisco de Sa Benevides
Vice Minister
Ministry of Agriculture, Forestry and Fisheries
Democratic Republic of Timor-Leste

Witness



Mrs. Aicha Bassarewan
Vice-Minister
Ministry of Planning and Finance
Democratic Republic of Timor-Leste

ATTACHMENT

1. Explanation of the Draft Final Report

The Team explained the draft final report to Ministry of Agriculture, Forestry and Fisheries (hereinafter referred to as "MAFF"), and MAFF agreed and accepted them in principle. However, MAFF commented that the Team would reconsider a possibility of construction of a storage shed and a drying floor to include in the basic design of the Project. The Team told MAFF to convey their comments to concerned Ministries after return to Japan.

2. Japan's Grant Aid Scheme

The Government of Timor-Leste understood the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Timor-Leste as explained by the Basic Design Study Team and described in Annex-5 and Annex-6 of Minutes of Discussion, dated on 15th of March, 2005.

3. Project Site

The Project site is located in about 150km west of Dili, Maliana sub-district of Bobonaro district, as shown in Annex- I .

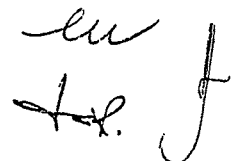
4. Further Schedule of the Study

- (1) The consultant will proceed with further studies in Timor-Leste until January 15, 2006.
- (2) JICA will complete the final report taking a result of the last study in account and send it to the Government of Timor-Leste by the end of March 2006.

5. OTHER RELEVANT ISSUES

5-1. Launch of Water Users' Association

Water Users' Association (hereinafter referred to as "WUA") for Maliana I has not been established yet, and at the present, MAFF is conducting the identification and confirmation of beneficiary farmers. The Team emphasized that the establishment of WUA was very crucial for the launch of the Project, because WUA would be responsible for operation and maintenance (O/M) of Maliana I facilities. MAFF explained that WUA for Maliana I would be established by the end of March 2006 with their responsibility.



5-2. Operation and Maintenance

MAFF explained that MAFF would assist 70% of O/M cost of the irrigation facilities for the first five years (1st – 5th) after the establishment of WUA, and 30% for the second five years, (6th – 10th). After 10 years, WUA will take full responsibility for O/M, but MAFF will assist WUA by conducting periodical monitoring and taking care of major repairs, such as severe damage to intake facility.

5-3. Technical Assistance

The Team explained that technical assistance was included as soft component of the Project, to strengthen WUA to properly conduct water management and O/M.

5-4. Obligations of Timor-Leste Side

Both sides confirmed that the items mentioned below were conducted by the Government of Timor-Leste with its own expenses before and during the implementation of the Project. They are:

- (1) Construction of Tertiary canals;
- (2) Land for widening canal section and necessary working space for construction of canals;
- (3) Land for temporary access road to Maliana I headworks, and to Aqueduct;
- (4) Land for concrete batcher plant, stock yard, and diversion canal at Maliana I headworks;
- (5) Land for WUA O/M facilities;
- (6) Tax exemption; and
- (7) Items for implementation of soft component listed as Annex- II .

5-5. Process of Environmental Assessment

MAFF submitted the Development Proposal Application of the Project to Secretary of State for Environment Coordination, Territorial Ordering and Physical Development (hereinafter referred to as "SSECTOPD") and the proposal is under the process of screening. SSECTOPD told the Team that they would inform a result of review in screening to MAFF by 18th January and MAFF is requested to prepare Environmental Management Plan and submit it to SSECTOPD for their approval.

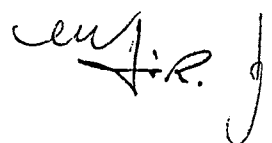
5-6. Security Issues

The Team explained the importance of security for the persons concerned during

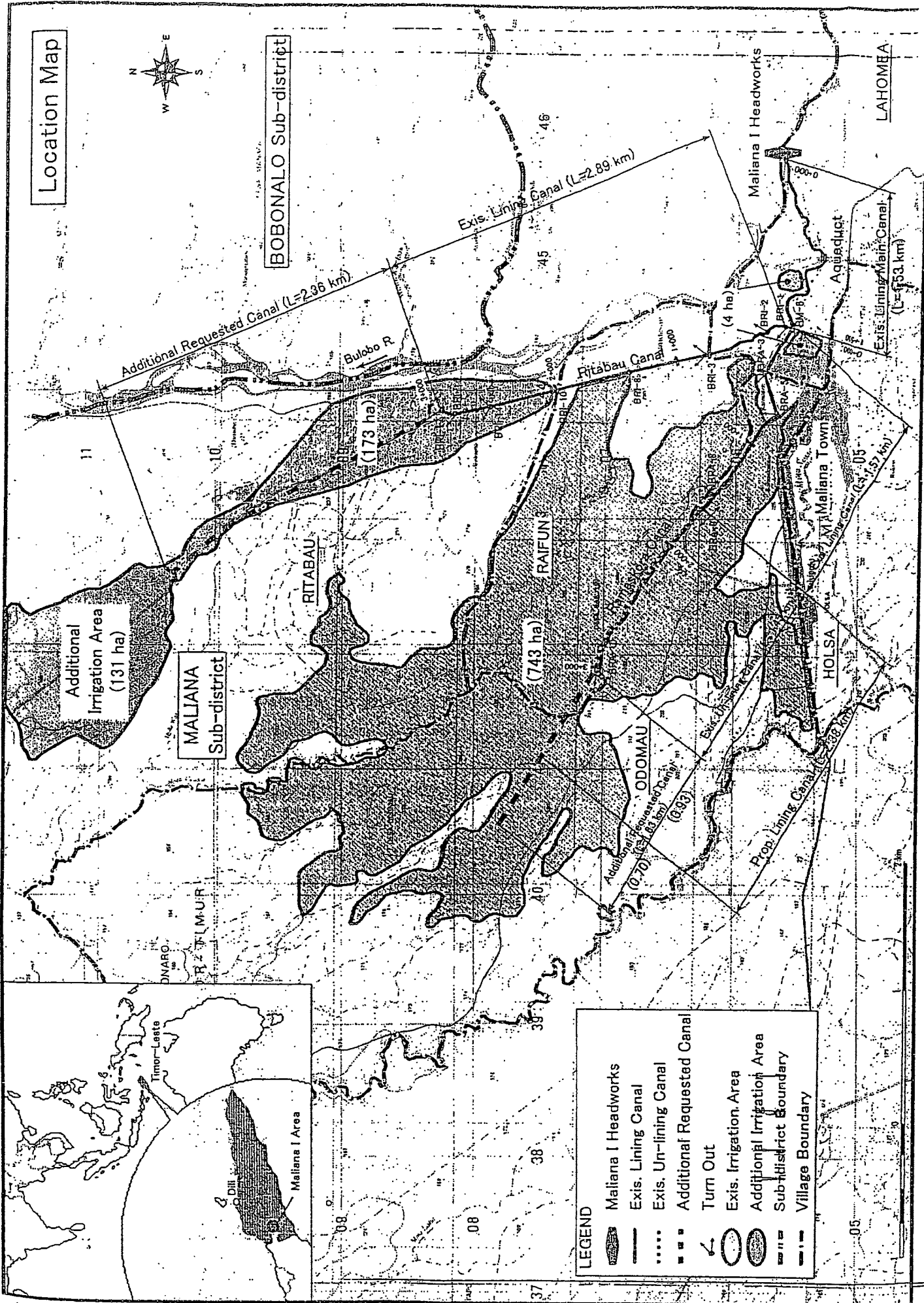
implementation of the Project. MAFF agreed to take necessary measures for the security of the persons concerned.

Annex- I Project Site Map

Annex- II Items undertaken by MAFF for implementation of soft component

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Location Map



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**Items to be undertaken by MAFF/Irrigation and Water Management Division (IWMD) for
executing Soft Component Plan**

(1) Items to be undertaken immediately are:

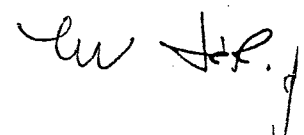
- 1) To prepare a list of beneficiaries;
- 2) To launch Working Group for WUA election, which consists of village chairmen, District Agricultural Coordinator, District Irrigation Officer, local consultant, staff of Maliana sub-district office, and representative of ASC, and other necessary persons;
- 3) To elect WUA Board members (President, Vice-president, Accountant and Secretary); and
- 4) To identify 22 Group leaders from beneficiaries.

(2) Items to be undertaken by the detailed design stage are:

- 1) To appoint a gate keeper other than an existing Marino; and
- 2) To allocate WUA advisor of IWMD during executing soft component plan when necessary.

(3) Items to be undertaken by and during the construction stage are:

- 1) To ensure beneficiaries to provide land for tertiary canals and O/M facilities building, including WUA meeting room;
- 2) To ensure beneficiaries to construct tertiary canals of 12 km length;
- 3) To supply necessary equipment such as white board, chair, table, rack and so on for the O/M facility building; and
- 4) To allocate budget for necessary expense of the above.



Appendix-5 Other Relevant Data

5-1	Memorandum of the Workshop at Basic Design Study.....	A5-2
5-2	Memorandum of Understanding for Land Acquisition.....	A5-9
5-3	Memorandum of the Workshop at Explanation of Draft BD Report.....	A5-11
5-4	Dimension of Existing Canals.....	A5-20
5-5	Conveyance Capacity of Existing Canals.....	A5-21
5-6	Record of Proposed Canal Structure.....	A5-24
5-7	Estimation of Water Requirement.....	A5-30
5-8	Examination of Sediment Control Works.....	A5-35
5-9	Design of Fixed Weir and Scouring Sluice.....	A5-38
5-10	Design of Canal Intake Works.....	A5-46
5-11	Balance Sheet for O/M Cost and Water Fee Collecting by Year.....	A5-55

Memorandum of the Workshop

On the Basic Design Study

On the Rehabilitation and Improvement of Maliana I Irrigation System

Date : March 17 2005

Location : District Administration Office, Bobonaro

Participants : Attached List

1. Opening by District Administrator, Leonel De Jesus Carvalho

He liked to thank everyone for attending. He liked to thank the government of Japan for thinking and caring about the people of Maliana I.

The Maliana I area has not yet reached its maximum potential production. This project will help the families live a better life with full production. At present, families work very hard in the fields and carrying water. It is hoped that this project will assist in relieving this burden.

If we think 3 years into the future, what work and productivity could we be achieving. How can we change our practices from relying solely on rainfall?

We need to create a community that can continue to develop into a strong and developed country. This will take time and many phases of development.

The Portuguese began building the irrigation system and the Indonesians continued to rehabilitate the system, and still the water did not reach all farmers. This project aims at providing an efficient and complete irrigation system, so we can grow crops all year round.

Today, we need to talk about how we are going to distribute the water equally. The project will need people, materials and money, if it is to succeed.

This is not a project to help *individuals*, to make money out of the construction phase → this project is to repair the irrigation system and extend the system so that *all* people can benefit → YOUR lives, not anyone else.

So I ask: → are you ready to participate? → are you, the community leaders, ready to contribute?

When development begins, we need to make the most of our opportunities.

2. Director of Irrigation, Martinho Soares (IWMD)

If we are going to build a 2-meter wide canal through government and individual people's land, Who is responsible?

If we are the people who benefit from the irrigation water, shouldn't we be the people who contribute to the construction? We CAN do this, we WANT to do this, this is our life. The fields need water to produce, so when will we start?

3. Questions from the Village Chiefs of the 5 villages

1) If a 2 meter canal is going to be built wider than the existing canal close to houses and roads, we will need to consult the communities → how will we do this process?

2) One Chefe Suco offered his village for expansion of the irrigation system

3) Can we really make a irrigation system that will help dryland farmers in the dry season? → Will there be enough water in the river?

→ How will the water be shared / distributed equally?

4) If you use workers in the construction phase, please use people from within the communities, not outside.

If all resources are being put in to the Maliana 1 how will this effect other irrigation development in other areas like downstream or Maliana 2

5) After the new construction, who has the maintenance responsibilities?

We need to involve the community in the design process.

4. Response to Questions by Martinho Soares (IWMD) and Alfredo Soares(DIO, Bobonaro)

If the water is not reaching you yet, we need to analyze why? The consultants have the data on the water load in the river, their design will share out only the available water in the river.

Regarding : work on the construction, the village chiefs will be consulted first, but jobs will be allocated according to skill levels required.

5. Mr. Kazumitsu Tsumura (JICA Team)

The water levels allocated to farmers will possibly increase, and the system can be expanded → but we can not make any promises.

We need to develop a system of agriculture to meet the water supply in the dry season, we may not ALL be able to have fully irrigated rice paddies in the dry season, so we will need a system of rotation that has different crops being allocated different amounts of water.

During construction, the project will be asking for a contribution of assistance of work from the communities. Japan's contribution will be the contracted engineers and managers (they may need manpower with paid work, but no promises).

It is important to explain that it will be the responsibility of the WUA and the community to construct the secondary and tertiary canals; this project is about the primary canals.

6. Martinho Soares (IWMD) adds,

A Water Storage dam is not part of this program, and will need to be considered in a separate program. It will be difficult to build water storage here in Maliana I due to geography and soil types.

Japan has worked in other areas of Timor-Leste like Manatutu. This is high quality work requiring highly skilled workers. They still did use some local workers.

Question to the audience : if the internationals assist by extending the canal → Can you use the water?

There are 3 components to the project

- 1) Rehabilitation of the Indonesian built canal
- 2) Construction of new extension of canals
- 3) Formation of WUA

7. Questions from the Audience

Q: Regarding the 2km extension of the Ramaskora canal, we believe that there is enough water, but there needs to be a very good strategy for distributing the water through tertiary canals. Now, the water does not reach these farmers at all.

Q: Many people have tried to repair the canal to his 20ha area at Dirou – but they still do not get water. States that he needs more secondary channels if the potential paddy is to be established.

Q: We need to form strong WUA to control water use but importantly, we need people to follow the regulations.

Asked if the government had plans to extend the irrigation to all of the Maliana I floodplain.

8. Response from Alfredo Soares (DIO, Bobonaro)

The most important point is that there is a need for the ‘WHOLE’ community to participate in WUA, and not to be greedy with water.

There will be an assessment of the current infrastructure and water supply before the design is started. The community and government will be asked to participate in the design process.

Strict need to control the irrigation canal gates so that the distribution of water is fair for all. If we are wasting water or losing water we need to discuss solutions quickly. This is because people at the ends of the tertiary canals will be effected the most. This is why it is so important that representatives of all of the areas are members of the WUA.

There may be scope for assistance in rehabilitating secondary canals, but importantly it is the responsibility of the communities to build the tertiary canals.

9. Questions from the Audience

Q: A point was raised about workers and who pays them to construct or rehabilitate tertiary canals.

Q: From Raifun, Before you start anything you should see how much water is here in the dry season, you need to make your assessments based on the least stream flow.

You will need to discuss the project with all the community in its design, particularly the timing of the rehabilitation and construction so that we can minimize the effect on agricultural calendar and production losses.

Q: From Ritabou, water is not reaching everyone now. Will all the water in the river 'really' meet our needs, even with a new rehabilitated system.

10. Response from Alfredo Soares (DIO, Bobonaro)

The potential of the river 'can' irrigate all the area, it just needs rehabilitation. This project will rehabilitate the main and secondary canals but we will need the government to rehabilitate the tertiary canals if we are all to benefit from the irrigation water.

11. Questions from the Audience

Q : There is a need for water daily (washing, drinking, cooking...), so when the construction is taking place, are you planning to open the canal at night time for us to collect water for domestic use.

12. Response from Alfredo Soares (DIO, Bobonaro)

The distribution system is not good now. The main canal needs to be wider, it needs to be kept clean and it needs to be better. It is up to YOU, THE COMMUNITY to make the tertiary canals a success so that all can get irrigation water.

Regarding the maintenance and operation of secondary and tertiary canals, we need to make good plans for their locations; we need to resolve problems by talking with the community leaders, the government and the WUA.

We need to listen and respect each other. We need to work together → do not lose this opportunity.

Water will stop when Rehabilitation/ construction takes place. We need to plan around this in the implementation. The community, government and Japan need to discuss how we will resolve the no domestic water issue.

13. Mr. Kazumitsu Tsumura (JICA Team)

Regarding, the amount of water people will be able to access: there will not be enough water for everyone to be dry season fully irrigated rice farmers. Instead, their needs to be a 'controlled' system of agriculture the uses the water to its maximum potential. There will need to be a rotation of crops and of areas to control the water requirements.

If we can 'share' the water, all farmers will be able to rotate rice/maize/ vegetables/ cassava then we will all get the benefit of the dry season irrigation.

14. Questions from the Audience

Q: You must take in to account 'culture' if this project is to succeed. For instance animal farmers, dryland farmers, fruit growers have different needs but can still affect the project's success. The chief of Odomau stated that past irrigation projects did not succeed because the engineers did not consult with the 'culture'. To succeed the project needs to hold a ceremony to request the 'water god's' permission to use the irrigation water. This will ensure all community members understand that the water is now in the 'water god's' control (this will be more powerful than the regulations in the government or WUA), and should be respected.

15. Closing from District Administrator

- Respects paid.
- We need to listen and learn from people with much more knowledge and experience than us. They will make this project work, they will make the system high quality → this will be all to help you → you need to comprehend this, you will be asked to participate and contribute. DO NOT CAUSE PROBLEMS, such as 'that is my sand or rocks!'
- In 2007 you will get the benefits, be patient
- Many investors have come to help Timor-Leste but the community must open its heart and gratefully receive the assistance → then you will be able to develop yourselves. Do not lie to or deceive donors, have some self respect and develop yourselves, you don't need to wait for donors. The DA says he has some self respect and could not lie or beg to donors.
- Thank you very much for today and the opportunity you are giving. Thanks to all attending the workshop and safe journeys home. Now let's go to work and with God's help we will succeed.

**LIST OF PARTICIPANT FOR WORKSOP
THURDAY,DATE 17 MARCH 2005**

NO	DATE	NAME	ADDRES	POSITION	SIGN
1	17/3/2005	Luis de Oliveira	Ritaqbou	Chefe Aldeia	
2		Jacinto Dau Bere	Holsa	Chefe Aldeia	
3		Alberto A.Fernandes	Raifun	Chefe Suco	
4		Domingos Lopes	Raifun	Concelho suco	
5		Manuel Lacasuri	Raifun	Farmer	
6		Vasco P.M.Soares	Raifun	Farmer	
7		Baltasar Fernandes	Raifun	Farmer	
8		Hilario Lopes	Raifun	Farmer	
9		Bento Pereira Maya	Raifun	Farmer	
10		Alfredo Lelobere	Raifun	Farmer	
11		Venancia da Cruz	Odomau	Concelho suco	
12		Ines de Jesus	Odomau	Concelho suco	
13		Agustinha Soi Loe	Ritabou	Farmer	
14		Antonio da Cruz	Odomau	Farmer	
15		Ano	Odomau	Farmer	
16		Alexandrino Timotiu Soares	Ritabou	Farmer	
17		Guilhermino da Cruz	Ritabou	Farmer	
18		Domingos Moniz	Ritabou	Chefe Aldeia	
19		ijac Martins	Ritabou	Farmer	
20		Carlito da Cunha	Ritabou	Farmer	
21		Joaquim Maubere	Ritabou	Farmer	
22		Adriano Moniz	Ritabou	Farmer	
23		Martinho Moniz	Ritabou	Farmer	
24		Domingos Soares	Ritabou	Farmer	
25		Josa Soares	Lahomea	Chefe Aldeia	
26		Sipriano da Cruz	Lahomea	Farmer	
27		Apolinario Barros	Lahomea	Concelho suco	
28		Alcino Pires	Lahomea	Farmer	
29		Baptista Pires	Lahomea	Chefe Aldeia	
30		Domingos Lopes	Raifun	Concelho suco	
31		Cosme Soares	Raifun	Chefe Aldeia	
32		Antonio Santa Cruz	Holsa	Chefe Suco	
33		Camilio Gomes	Holsa	Concelho suco	
34		Fernando Pires	Raifun	Farmer	
35		Martinho Bilimau	Lahomea	Chefe Suco	
36		Tohmas C.Lopes	Raifun	Farmer	
37		Alfredo Miniz da Costa	Cailaco	Adm.Sub.Dist	
38		Domingos Martins	Maliana	Adm.Sub.Dist	
39		Carlos Credos	Bobonaro	Adm.Sub.Dist	
40		Alfredo Soares	Maliana	DAO	
41		Agusto Soares	Ritabou	Farmer	
42		Mateus Gomes	Ritabou	Farmer	
43		Fernando Credos	Maliana	Staf WVI	
44		Fernando santos	Maliana	Staf WVI	
45		Moises Lopes	Odomau	Farmer	

**LIST OF PARTICIPANT FOR WORKSOP
THURDAY,DATE 17 MARCH 2005**

NO	DATE	NAME	ADDRES	POSITION	SIGN
46	17/3/2005	Abel Pereira	Ritabou	Chefe Suco	
47		Carlito da Cunha	Ritabou	Farmer	
48		Tohmas C.Lopes	Raifun	Farmer	
49		Maubili	Lahomea	Farmer	
50		Aniceto Maubuti	Lahomea	Chefe Aldeia	
51		Carla Credos	Maliana	Farmer	
52		Salomao da Cruz	Maliana	Chefe Suco	
53		Jose Soares	Lahomea	DLO	
54		Semedu da Costa	Maliana	Infrastructure	
55		Aleixo Soares	Lahomea	DLO	
56		Natalino Lelobili	Raifun	Farmer	
57		Artur Soares	Raifun	Farmer	
58		Celestinho Henrique	Maliana	District Irg.Ofc.	
59		Fonciano de Fatima	Odomau	Farmer	
60		Justinho Guterres	Holsa	Farmer	
61		Tohmas Laculoi	Lahomea	P3A	
62		Dinis da Costa	Lahomea	RCM	
63		Victor Pires Sousa	Odomau	Manager ASC	
64		Tome dos Santos	Ritabou	Concelho suco	
65		Jose Mali	Ritabou	Farmer	
66		Marcal Amaral	Lahomea	Farmer	
67		Nuno Tolentino	Maliana	WVI Staf	
68		Mario Amaral	Lahomea	Farmer	
69		Paulo da Costa	Holsa	Farmer	
70		Jose da Costa	Raifun	Farmer	
71		Fumihiko Komada	SCI	Staff	
72		Masanari Narukawa	SCI	Staff	
73		Yusuke Maruno	SCI	Staff	
74		Kazumitsu Tsumura	SCI	Staff	
75		Chris Walsh	Maliana	WVI Staf	
76		Leonel Jesus Carvalho	Maliana	Adm.District	
77		Martinho Soares	Dili	Irigation	
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REPÚBLICA DEMOCRÁTICA DE TIMOR LESTE
ADMINISTRAÇÃO PÚBLICA DISTRITO DE
BOBONARO

ACORDO UZA RAI HO BUAT SELUK-SELUK TAN BA PROJETO
REHABILITASAUN, HO HADIA SISTEMA IRIGASAUN MALIANA I

Ohin dia 17 de Marco 2005, ami lori Comunidade/ Benefisiaris ba natar uza be sistema irigasaun Maliana I, Sub-Distrito Maliana Distrito Bobonaro tomak, hodi koncorda/ oferece uza rai ho asset seluk tan ba projecto Rehabilitasaun ho hadia sistema irigasaun Maliana I.

- 1) Administrador Distrito Bobonaro: Leonel de Jesus Carvalho
- 2) Administrador Sub Distrito Maliana: Domingos Martins
- 3) Chefe Desenvolvimento Distrito Bobonaro: Arcanjo R. Tilman
- 4) Chefe Rai e Propriedade Distrito Bobonaro: Carlos A. Cardoso
- 5) Chefe Sucu Lahomea: Martinho Bili Mau
- 6) Chefe Sucu Odomau: Salamão da Cruz
- 7) Chefe Sucu Holsa: Antonio Santa Cruz
- 8) Chefe Sucu Raifun: Alberto Fernandes
- 9) Chefe Sucu Ritabou: Abel P. Maureso

Acordo nee ami halo ho laran Kaman, no aban bain rua ami la husu Compensasaun ba rai ho asset seluk-seluk tan nebe mak projeto Rehabilitasaun ho hadia sistema Irigasaun Maliana I ne'e kona ba.

Maka nee deit Obrigado.

(LETTER HEAD OF BOBONARO DISTRICT ADMINISTRATION)

Memorandum of Understanding
for
Maliana I Irrigation Rehabilitation

Today, March the 17th 2005, the beneficiaries/ community for Maliana I Irrigation Scheme accept to allow their land and other facilities to be used for Maliana I Rehabilitation

- | | |
|--|--------------------------|
| 1) District Administrator, Bobonaro: | Leonel de Jesus Carvalho |
| 2) Sub-district Administrator of Maliana: | Domingos Matins |
| 3) District Development Officer, Bobonaro: | Arcanjo R. Tilman |
| 4) District Land Property, Bibonaro: | Carlos A. Cardoso |
| 5) Chief of Village, Lahomea: | Matinho Bili Mau |
| 6) Chief of Village, Odomau: | Salamao da Cruz |
| 7) Chief of Village, Holsa: | Antonio Santa Cruz |
| 8) Chief of Village, Raifun: | Alberto Fernandes |
| 9) Chief of Village, Ritabou: | Abel P. Maureso |

This agreement is done by the community who has agree that there will be no objection for land and any other facilities in the future.

Thanks.