

<p>3) Technical supporting system for water management is improved.</p>	<p>3-1) Technical supporting system for water management is used by March 2004.</p> <p><i>(Performance)</i> Three technology assistance systems, which were planned at the beginning of the project, land use ledger system, hydraulic phenomena simulation, and water balance simulation have almost been completed. At present, C/P are addressing the compilation of the technical book to disseminate these three systems. It is expected that the technical book will be completed by the end of the project.</p>	<p>PRFE, Interview with JLE and ID, Presentation by ID</p>
	<p>3-2) Proposal manuals for reservoir capacity survey are prepared by March 2004.</p> <p><i>(Performance)</i> The introduction of survey on inflow and outflow of the reservoir and measurement of reservoir water storage has almost been achieved. At present, C/P are addressing the compilation of the manual for the measurement of reservoir water storage.</p> <p>3-3) Counterparts' technical capacity will be improved.</p> <p><i>(Performance)</i> C/P can prepare training materials by themselves. In addition, C/P can lecture in the training seminar for ID staff.</p>	<p>PRFE, Interview with JLE and ID, Presentation by ID</p> <p>PRFE, Interview with JLE and ID, Presentation by ID</p>

A

<p>4) Irrigation information management technology is improved to monitor irrigation projects.</p>	<p>4-1) Data collection and processing of irrigation projects will be started by March 2004.</p> <p><i>(Performance)</i> Regarding data collection and processing of the irrigation project area, outputs in other fields need to be included. Since some activities in the fields of main facilities and terminal facilities are behind schedule, part of the data collection and processing of irrigation projects have been delayed. However, by the end of the project period, it is expected to be achieved.</p> <p>4-2) Monitoring on water management will be started by March 2004.</p> <p><i>(Performance)</i> The establishment of monitoring on water management is related to the fields of main and terminal facilities. Since some activities in these fields are behind schedule, it seems difficult to establish the monitoring methods by March 2004.</p> <p>4-3) Counterparts' technical capacity will be improved.</p> <p><i>(Performance)</i> C/P prepare training materials by utilizing the outputs of the activities. In addition, C/P can lecture in the training seminars for ID staff and farmers. The questionnaire after the training shows that trainees (ID staff and farmers) have acquired necessary knowledge through the training.</p>	<p>PRFE, Interview with JLE and ID, Presentation by ID</p> <p>PRFE, Interview with JLE and ID, Presentation by ID</p> <p>PRFE, Interview with JLE and ID, Presentation by ID</p>
--	--	--

<p>5) Water management technology is disseminated to technical staff of Irrigation Department and farmers in test farm through training.</p>	<p>5-1) 26 times of training for 790 ID staffs will be conducted by March 2004.</p> <p><i>(Performance)</i> 22 times of training for water management have been conducted, and 1,012 ID staff have participated in the training. From now onwards, another 10 times of training are scheduled by the end of the project. The ID staff who received the training are satisfied with the training. According to the questionnaire and interview, most of them feel that they have enough irrigation knowledge to manage the irrigation facilities by themselves.</p> <p>5-2) 9 times of training for 460 farmers will be conducted by March 2004.</p> <p><i>(Performance)</i> 25 times of training for water management have been conducted, and 752 farmers have participated in the training. According to the interview with the farmers in the test farm, most of them received training about water management and agronomy. According to the interview with farmers who received training, all the farmers have adopted the water management method instructed through the training.</p> <p>5-3) Training master plan will be prepared and approved by ID by March 2003.</p> <p><i>(Performance)</i> The training master plan was completed in February 2003 and was approved in July 2003 by the Director General of the Irrigation of Department</p>	<p>PRFE, Interview with JLE and ID, Presentation by ID</p> <p>PRFE, Interview with farmers</p> <p>PRFE</p>
<p>Activities</p> <p>Please refer to Annex 2 "Achievement of the Planned Activities"</p>		

A

Input	Myanmar side	Japanese side	Data Sources/ References
	<p>(1) Counterparts (35 C/P)</p> <ol style="list-style-type: none"> 1) Project Director 2) Deputy Project Director 3) Project Manager 4) Two Assistant Directors 5) C/P for Experts 6) Management Staff 7) Technical Staff 8) Other staff as needed <p>(2) Land, building, and facilities</p> <ol style="list-style-type: none"> 1) Land and facilities for the project 2) Office and other facilities for Japanese Experts 3) Facilities to keep provided machinery 4) Other facilities <p>(3) Allocation of Budget and Expenditure</p> <p>JFY1999-JFY2003 Total Received Budget: 202,022,770.00 Kyats Total Expenditure: 200,726,499.47 Kyats</p>	<p>(1) Dispatch of Japanese Experts</p> <ol style="list-style-type: none"> 1) Long-term Experts (13) <ol style="list-style-type: none"> a) Chief Advisor/ Irrigation Information Management b) Coordinator/Training c) Water Management for Main Facilities d) Water Management for Terminal Facilities e) System Development 2) Short-term Experts (19) <ol style="list-style-type: none"> a) System Development b) Water Management for Main Facilities c) Training Plan d) Water Management for Terminal Facilities e) Irrigation Information Management f) Training <p>(2) Provision of equipment</p> <p>Total: ¥47,116,800 US\$354,701.1</p> <p>(3) Training of Myanmar C/P in Japan</p> <p>29 persons in total received training in Japan.</p> <p>(4) Supporting Local Cost</p> <p>Total: US\$500,025</p>	<p>PRFE</p>

A

46

4. Results of Evaluation by Five Criteria

4-0 Project Implementation Process

Evaluation Questions	Results	Data Sources/References
<p>0.1 Appropriateness of the Implementation Process</p>	<p>1) Appropriateness of communication between C/P and Japanese Experts</p> <p>+ The work places for Japanese Long-term Experts and C/P are separated by field to the ITC Head Office in Bago (irrigation information management, system development, training), the sub-office in Hlegu (water management for main facilities, water management for terminal facilities), and the Irrigation Department in Yangon. In order to promote communication between Japanese Long-term Experts and C/P, the ITC meeting is held every two weeks at the ITC Head Office in Bago.</p> <p>+ Most C/P communicated with Japanese Long-term Experts quite often (almost everyday or more than two or three times a week). Overall, both C/P and Japanese Experts feel that communication between them has worked well.</p> <p>2) Consistency with PDM and PO</p> <p>+ Most activities have been conducted based on the PO (<i>See Annex 2 "Achievement of the Project Activities"</i>).</p>	<p>Questionnaire to C/P and JLE</p> <p>Questionnaire to C/P and JLE</p> <p>Questionnaire to JLE, PRFE</p>

4-1 Relevance

Evaluation Questions	Results	Data Sources/References
<p>1.1 Relevance of Overall Goal, Intermediate Goal, and Project Purpose</p>	<p>1) Consistency with the national agricultural policy of the Myanmar Government</p> <p>+ The Ministry of Agriculture and Irrigation has taken a policy for agricultural development to expand agricultural production since 1988. It can be judged that the Overall Goal, "To raise agriculture productivity through improvement of irrigation technology," is consistent with the agricultural policy of the Myanmar government.</p> <p>+ In the policy for agricultural development, the following issues have been focused since 1988: a) the construction of new reservoirs and dams; b) the proper water management for the storage and utilization of run-off water from the watershed areas; c) the renovation of existing reservoirs for raising storage capacity and efficient delivery of irrigation water; d) the diversion of water from streams and rivers, during high water levels into adjacent ponds or depressions for storage with sluice gates; e) the lifting of water from rivers and streams through pump irrigation, and f) the efficient utilization of ground water resources. To address these issues, it is indispensable to upgrade irrigation technology. Therefore, the Project Purpose, "To establish appropriate water management technology in the three irrigation areas," is also consistent with the agricultural and irrigation policy of the Myanmar government.</p> <p>2) Consistency with the needs of the target area(s)/group(s)</p> <p>+ Ngamoeyeik is a rice production area. The rice direct purchasing system by the government was abolished in 2003, which may urge farmers to produce quality rice. In such circumstances, the selection of a rice production area as a project model area is evaluated as relevant.</p>	<p>PRFE</p> <p>PRFE, Brief of Irrigation Department</p> <p>PRFE, Interview with C/P</p>

A

YU

	<p>3) Consistency with the Japanese aid policy for Myanmar</p> <p>+ In Myanmar, the following are important issues for development; a) appropriate management of its macro economy; b) industry development and trade promotion, and c) agriculture and rural development. As its development policy, Japan focuses on these issues. Regarding agriculture and rural development, Japan provides aid specifically for the development of irrigation technology, the introduction of horticultural products, and the improvement of agricultural processing.</p>	JICA Country Assistance Strategy
1.2 Relevance of Project Design	<p>1) Appropriateness of the scheme of Technical Cooperation</p> <p>+ According to the questionnaire, most ID staff and Japanese Experts feel that the scheme of Technical Cooperation is appropriate.</p>	Questionnaire to C/P and JLE

4-2 Effectiveness

2.1 Achievement of Outputs	<p>1) Achievement of Outputs</p> <p>± The five expected Outputs have almost been successfully produced as verified by the indicators listed in the Achievement Grid. However, due to the delay of some activities, especially in the fields of Water Management for Main Facilities, Water Management for Terminal Facilities, and Irrigation Information Management, part of the Outputs will not be achieved by the end of the project (<i>See Achievement Grid</i>).</p>	Achievement Grid (Outputs)
2.2 Achievement of Project Purpose	<p>1) Achievement of Project Purpose</p> <p>± The Project Purpose has almost been achieved except some part of the following three fields: Water Management for Main Facilities, Water Management for Terminal Facilities; and Irrigation Information Management (<i>See Achievement Grid</i>).</p>	Achievement Grid (Project Purpose)

A

10

<p>2.3 Contribution of the Outputs to the Achievement of Project Purpose</p>	<p>1) Contribution of Outputs to the achievement of Project Purpose</p> <p>± Output 1, "Irrigation technology of water management and maintenance in main facilities is improved," consists of two major components: formulating a water distribution plan and an operational plan. Regarding a water distribution plan, C/P has already acquired how to formulate the plan and can control the water level. As for an operational plan, however, it has not been started yet because of an unexpected rainfall in a dry season. So, C/P still need to master how to formulate an operational plan and use it. Japanese Experts are planning to start teaching C/P how to formulate and use the plan in November 2003. It is scheduled up to May 2004, and after that they need to analyze the data. Therefore, before the project is completed in March 2004, it is estimated that part of the Project Purpose related to main facilities cannot be achieved.</p> <p>± Output 2, "Study method for water management of terminal irrigation system is improved," consists of the establishment of the development to improve terminal facilities, which has already been achieved, and technology transfer about water management. As for the latter one, there are three major components. The first one is to measure water requirement in the test farm; the second is to survey on the density of water courses, and the third is to study rotational irrigation. Regarding the survey on water attainment time to examine the density of water courses, the survey could not be conducted in the dry season of 2002-2003 due to unexpected rainfall just before the beginning of the dry season. Therefore, in the next dry season starting from November 2003, the survey needs to be conducted. Regarding the study on rotational irrigation, it is closely related to main facilities, in which the formulation of the operational plan is behind schedule. Consequently, it is estimated that part of the Project Purpose related to terminal facilities cannot be achieved by the end of the project period.</p> <p>+ Output3, "Technical supporting system for water management is improved," consists of the development of three systems: land use ledger system; hydraulic phenomena simulation, and water balance simulation, and the preparation for proposal manuals for reservoir capacity survey. All the activities related to these systems are on schedule and can be expected to be completed by March 2004. Therefore, technology transfer in these fields will be conducted sufficiently, which contributes to the achievement of the Project Purpose.</p>	<p>PRFE, Interview with JLE and ID</p> <p>PRFE, Interview with JLE and ID</p> <p>PRFE, Interview with JLE and ID</p>
--	--	--

	<p>± Output 4, "Irrigation information management technology is improved to monitor irrigation projects," consists of two major components: data collection and processing of irrigation projects, and monitoring on water management. Data collection and processing of irrigation projects is expected to be achieved. It seems difficult that monitoring on water management will be completed by March 2004. Therefore, it is estimated that part of the Project Purpose related to Irrigation Information Management cannot be achieved by the end of the project period.</p> <p>+ With regard to Output 5, "Water management technology is disseminated to technical staff of Irrigation Department and farmers in the test farm through training," ID engineers have gained enough knowledge on water management through training, which enables them to prepare training materials for training and to lecture on water management.</p> <p>+ In technology transfer, Japanese Long-term Experts have tried to foster self-reliance of C/P. The Experts first let C/P present their own ideas and have a discussion with them later, which encouraged C/P to work in a positive and independent manner.</p> <p>+ According to the questionnaire to Japanese Experts, they appreciate C/P's ability to learn and evaluate that the survey and planning conducted by C/P was satisfactory.</p>	<p>PRFE, Interview with JLE and ID</p> <p>PRFE, Interview with JLE and ID</p> <p>PRFE, Interview with JLE Questionnaire to JLE</p> <p>Questionnaire to JLE</p>
<p>2.4 Existence of factors that inhibited Outputs from leading to Project Purpose</p>	<p>1) Fulfillment of Important Assumptions and emergence of other inhibiting factors</p> <p>- Due to unexpected rainfall just before a dry season, the improvement of operational and management technology for the main facilities and the survey on the density of water courses have been delayed.</p> <p>- Since the number of intake facilities increases arbitrarily, water balance simulation has to be revised every year.</p>	<p>PRFE, Questionnaire to JLE, Interview with JLE, Questionnaire to JLE</p>

A

4-3 Efficiency

<p>3.1 Appropriateness of Inputs in relation to the Outputs</p>	<p><Japan> 1) Appropriateness of Japanese Experts in terms of number, specialization, length of stay and timing of dispatch</p> <p>+ Both Long-term and Short-term Experts have been dispatched as planned (<i>See Achievement Grid</i>).</p> <p>+ Almost all the C/P feels that Japanese Long-term Experts are appropriate in terms of number, specialization, length of stay and timing of dispatch.</p> <p>± Japanese Long-term Experts feel that their dispatch is fair in terms of number, specialization, length of stay and timing of dispatch. Some of them feel that a Long-term Experts on agronomy should have been dispatched, too, because upgraded agricultural technology including not only water management but also the proper use of fertilizers etc. is needed in order to increase rice yields of the farmers.</p> <p>2) Appropriateness of provided equipment in terms of type, quantity, quality and timing of installation</p> <p>+ Machinery and equipment were provided as planned (<i>See Achievement Grid</i>).</p> <p>+ According to the questionnaire, all ID engineers feel that the provided equipment and machinery were appropriate for the project.</p> <p>- Some Japanese Long-term Experts feel that there were some problems in the timing of the procurement of machinery and equipment. For instance, some were provided behind schedule. It took tremendous amount of time to receive the import permission. The answer of the questionnaire says that to cope with this problem, one-time procurement at the commencement of the project should be considered.</p>	<p>PRFE, Questionnaire to JLE Questionnaire to C/P and JLE</p> <p>PRFE, Questionnaire to JLE</p> <p>Achievement Grid</p> <p>PRFE, Questionnaire to C/P</p> <p>Questionnaire to JLE</p>
---	---	--

A

Y

	<p>3) Appropriateness of the acceptance of trainees in Japan in terms of number, subject, program, length of stay and timing of acceptance</p> <p>+ According to the questionnaire, most C/P and Japanese Long-term Experts evaluate that training in Japan was appropriate in terms of number, subject, program, length of stay, and timing of acceptance.</p> <p>+ The combination of the acceptance of trainees and the dispatch of Japanese Short-term Experts was effective.</p> <p>4) Appropriateness of local cost support by Japan</p> <p>+ The local cost support by Japan was almost appropriate to conduct the planned activities.</p>	<p>Questionnaire to C/P</p> <p>Questionnaire to JLE</p> <p>Achievement Grid (Inputs), Questionnaire to JLE</p>
	<p><Myanmar></p> <p>5) Appropriateness of the staffing of C/P in terms of number, assignment, and competence</p> <p>+ C/P and the administrative staff were assigned as planned (<i>See Achievement Grid</i>).</p> <p>+ Japanese Experts appreciate C/P's excellent competency in understanding a variety of fields targeted by the project.</p> <p>6) Appropriateness of the maintenance conditions of the provided equipment/facilities</p> <p>+ All Japanese Long-term Experts answered that manuals for equipment were being utilized by C/P, and according to the questionnaire, most C/P feel that those manuals are user-friendly. All the equipment/machinery will be well maintained.</p> <p>7) Appropriateness of the project operational cost funded by the Myanmar side</p> <p>+ According to the questionnaire, most Japanese Long-term Experts are satisfied with the operational cost funded by the Myanmar side.</p>	<p>Questionnaire to JLE</p> <p>Questionnaire to JLE</p> <p>Questionnaire to JLE</p> <p>Questionnaire to JLE</p>

A

110

thanks to the project, water has come to be distributed equally, and that they can take enough water more easily.

To compare with the condition of water management before the construction of irrigation facilities, an interview was conducted to 10 farmers. The result of the interview is shown in the table below.

Q: After the construction of irrigation facilities,

Q1: Can you take irrigation water easily?		
More easily	Same	Worse
10	0	0
Q2: Can you take enough irrigation water?		
Enough	Same	Worse
10	0	0
Q3: Do you think that irrigation water is distributed equally?		
Fair	Not fair	
10	0	
Q4: Can you cultivate paddy fields according to your schedule?		
Yes	Same	Worse
10	0	0
Q5: Do you think that quarrels about irrigation water among the village have been reduced?		
Yes	No	
10	0	

(Data source: interview with extensive-type farmers in the test farm)

Interview with farmers

2) Negative impact

± Since upstream farmers try to take as much water as possible, sometimes conflict has happened between upstream farmers and downstream farmers. Furthermore, unauthorized use of water, which means that farmers open the gate of the distribution point at night when they are not supposed to do, has sometimes happened. However, through negotiations among the farmers, the problems have been solved, and farmers have come to cooperate with one another.

Interview with MAS and maintenance office

<p>4.3 Existence of contributing and inhibiting factors to produce the impact</p>	<p>1) Fulfillment of Important Assumptions, and the emergence of other inhibiting factors for Outputs, Project Purpose, Intermediate Goal, and Overall Goal</p> <p>a) Important Assumptions</p> <p>+ Policy: "Agricultural development policy will continue" is fulfilled, since the government is pursuing the agricultural and irrigation development policy focusing on the 6 fields as mentioned in 4-1 Relevance 1.1.</p> <p>b) Inhibiting factors</p> <p>- Unexpected rainfall, which happened in a dry season, has delayed some activities.</p> <p>- Blackouts and computer break-down have occasionally interrupted daily activities.</p> <p>± In Myanmar, the rice price is relatively not stable. Therefore, it is not sure that farmers can get the return in proportion to the input.</p>	<p>PRFE, Interview with JLE, Questionnaire to JLE</p> <p>Questionnaire to JLE</p> <p>Questionnaire to JLE</p> <p>Interview with C/P and JLE</p>
---	--	---

A

4-5 Sustainability

Evaluation Questions	Results	Data Sources/References
5.1 Organizational Sustainability	<p>1) Prospects that the Myanmar government will pursue the policy for the support of irrigation development</p> <p>+ In addition to the fact that the Ministry of Agriculture and Irrigation has taken the policy on agricultural development to expand agricultural production since 1988, the Myanmar government also emphasizes the following issues in the Third Five-Year Plan (2001-2005) for the National Development; a) the development of industries based on agriculture; b) fulfillment of domestic demand and export promotion by developing agriculture and fishery industries; and c) rural development. Judging from these things, the Myanmar government will pursue the policy for the support of irrigation development, since irrigation is one of the essential factors for agricultural and rural development.</p> <p>+ The Ministry of Agriculture and Irrigation received the ASEAN Engineering Award in 2002 for the achievement of the construction of 138 irrigation facilities for irrigation from 1988 to 2002, and the contribution to the poverty reduction through water resources development.</p> <p>2) Appropriateness of positioning of ID engineers</p> <p>+ ID is going to carefully consider personnel transfer for the effective and efficient “technology transfer” among the ID staff. A good combination of trained/non-trained engineers is supposed to be considered after the project period.</p> <p>+ C/P working at the ITC, who was dispatched to Japan on the scholarship program by the Ministry of Education and Science, came back to the ITC and have been working for the project by taking full advantage of the knowledge and skills acquired in Japan.</p>	<p>PRFE</p> <p>PRFE, Interview with ID</p> <p>Interview with ID</p> <p>Interview with ID</p>

A

M

	<p>+ In the Phase II Project, training for water management has been focused on the staff of the maintenance offices. After the Project is completed, it is scheduled that the same kind of training will be conducted for the staff of the maintenance offices. Therefore, it can be expected that the staff of the ITC and the maintenance offices will contribute to the further development and dissemination of the upgraded irrigation technology even after the project is completed.</p> <p>3) Administrative, institutional, and operational system of the Irrigation Technology Center (ITC)</p> <p>+ ITC is determined to maintain the present organizational structure until they achieve the Intermediate Goal, "To establish appropriate water management technology in the three irrigation areas."</p> <p>+ It has been under discussion that after the completion of the Phase II Project, the function of ITC will be expanded and that its name will be changed to the Irrigation Technology Research and Development Center (ITRDC). Water management in the irrigated area is supervised by the maintenance offices. Irrigation and operational planning is supposed to be conducted by the staff of the maintenance office, and ITRDC is supposed to be responsible for training for the ID staff and farmers.</p>	<p>Interview with ID</p> <p>Interview with ID</p> <p>Interview with ID</p>
<p>5.2 Financial Viability</p>	<p>1) Financial Viability of ITC</p> <p>+ At present, approximately 100 million kyats is allocated to ITC (roughly 50% each from ID and JICA). After the end of the project, ITC is determined to request ID to increase the budget allocation for ITC to compensate for the 50 million that JICA has provided for the project.</p> <p>+ The annual budget of ITC has been increasing. In the fiscal year of 2002-2003, approximately 25% of the total ID budget is allocated for operation and maintenance. Since ID focuses on operation and maintenance of irrigation facilities, it can be estimated that the budget allocation for ITC will increase in the future.</p>	<p>PRFE, Data from ID staff, Interview with ID</p> <p>Data from ID staff, Interview with ID</p>

A

Ys

<p>5.3 Technological Sustainability</p>	<p>1) Acquisition of irrigation/water management technology of ID engineers, staff of the maintenance office, and farmers.</p> <p>+ As already mentioned in the Achievement Grid, regarding the fields in which technology transfer has been finished, ID engineers have acquired enough technology for upgraded water management to work independently after the completion of the project.</p> <p>+ According to the questionnaire, all ID engineers feel that their awareness of irrigation management and expertise on irrigation technology have improved through technology transfer of the project.</p> <p>+ As for farmers, through training on water management, their awareness of water management has also been raised as the table below shows.</p> <p>Q: After the construction of irrigation facilities,</p> <table border="1" data-bbox="536 891 1174 1111"> <tr> <td colspan="3">Q6: Do you go to the paddy fields to manage irrigation water more often than before?</td> </tr> <tr> <td>Yes</td> <td>Same</td> <td>No</td> </tr> <tr> <td>5</td> <td>3</td> <td>2</td> </tr> <tr> <td colspan="3">Q7: When did you start keeping the ponding depth in the paddy ?</td> </tr> <tr> <td>Before training</td> <td>After training</td> <td>Never kept</td> </tr> <tr> <td>2</td> <td>8</td> <td>0</td> </tr> </table> <p>(Data source: interview with extensive-type farmers)</p> <p>+ The interview with 29 farmers in the test farm has found that all of them feel that by receiving training for water management, they have gained enough technique to conduct water management by themselves.</p>	Q6: Do you go to the paddy fields to manage irrigation water more often than before?			Yes	Same	No	5	3	2	Q7: When did you start keeping the ponding depth in the paddy ?			Before training	After training	Never kept	2	8	0	<p>Achievement Grid, PRFE</p> <p>PRFE,</p> <p>Interview with farmers</p>
Q6: Do you go to the paddy fields to manage irrigation water more often than before?																				
Yes	Same	No																		
5	3	2																		
Q7: When did you start keeping the ponding depth in the paddy ?																				
Before training	After training	Never kept																		
2	8	0																		
	<p>2) Prospects that the equipment/facilities will be well maintained</p> <p>+ According to the questionnaire, all Japanese Long-term Experts feel that manuals for the equipment/facilities are used effectively, and most C/P feel that the manuals are user-friendly. Therefore, it is expected that the equipment /facilities will be well maintained after the project.</p>	<p>Questionnaire to JLE, Interview with C/P</p>																		

A

11

5. Conclusion

The Joint Evaluation Team has found that most activities have been conducted as planned, and that throughout the project, appropriate communication has been maintained between Japanese Long-term Experts and Counterparts, which has promoted technological transfer in a positive manner. Judging from these facts, the Project Purpose will be achieved to a large extent by the end of the project.

However, part of the Project Purpose, the completion of the technical book, has not been achieved. Since the completion of the technical book is indispensable to achieve the Intermediate Goal, appropriate actions need to be considered. The following three fields are behind schedule.

- 1) Implementation of the operation plan and evaluation of main facilities
- 2) Survey on the density of water courses and the rotational irrigation of terminal facilities
- 3) Verification of the monitoring methods for water management

6. Recommendations

As mentioned in the Conclusion, in the process of the preparation of the technical book, the aforementioned three fields are behind schedule. In order to complete those sections of the technical book, proper actions need to be taken from both Japan and Myanmar in the future.

- 1) Japan: further assistance for Myanmar

Regarding the three fields in which the outputs have not been achieved, further assistance from Japan is necessary in accordance with the degree of non-achievement of the Project Purpose.

- 2) Myanmar: appropriate preparation for the acceptance of the further assistance from Japan

Appropriate organizational structure and personnel assignment and budget of the ITC need to be maintained as in the Phase II project. ITC should include the contents of both water management and agronomy in the training for ID engineers and farmers, in collaboration with MAS. Regarding equipment/machinery, the Myanmar side has agreed that all the equipment/machinery provided in the project (*See Annex 5*) should be used after the project period is completed.

A

Y/C

7. Lessons Learned

- 1) To increase agricultural productivity, not only water management but also other agricultural factors of production related to agronomy are indispensable. In irrigation projects, aid approaches should be taken in which both water management and agronomy are combined.
- 2) In the planning, monitoring, and implementation process, the ultimate beneficiaries always need to be considered even if they are not defined as the target group in the PDM.
- 3) Not only irrigation project but also agricultural development projects in general are likely to be influenced by weather conditions and natural environment. Although these factors cannot be controlled within the project, they should be considered carefully at the planning stage.

A

M

A

Project Design Matrix (PDM-e)

Date: 22 August, 2003

Project Area: Ngamoeyeik Irrigation Project

Duration: April 1, 1999 ~ March 31, 2004

Target Group: Irrigation Department (ID) Engineers

Summary of the Project	Verifiable Indicators	Means of Verification	Important Assumptions
<p>1. Overall Goal</p> <p>To raise agriculture productivity through improvement of irrigation technology.</p>	<p>Total yields in irrigated fields are increased through efficient irrigation water use.</p>	<p>Agricultural statistics</p>	
<p>1' Intermediate Goal</p> <p>To establish appropriate water management technology in the three irrigation areas.</p>	<p>1'-1) Three technical books for appropriate water management in the irrigation areas* are submitted by March 2009.</p> <p>1'-2) The water management training is implemented twice a year from 2005.</p> <p>1'-3) Materials of water management training and its implementation plan are set up by March 2005.</p> <p>Note) * : Tabuhla, Zalehtaw, Mazin irrigation areas</p>	<p>Annual report of ID</p>	<p>- Irrigation facilities will be improved by using the project proposal</p>
<p>2. Project Purpose</p> <p>To upgrade the irrigation technology especially in water management in Ngamoyeik Project Area as a model, applying the basic irrigation technology which was achieved through the Phase I Project.</p>	<p>1) A technical book for appropriate water management for the project area is submitted by March 2004.</p> <p>2) Counterparts can lecture the appropriate water management.</p>	<p>1) Annual report of ID</p> <p>2) Interview</p>	<p>-Dissemination of water management technology developed by the project</p> <p>- Agricultural development policy will continue</p>

A

<p>3. Outputs</p> <p>1) Irrigation technology of water management and maintenance in main facilities is improved.</p> <p>2) Study method for water management of terminal irrigation system is improved.</p> <p>3) Technical supporting system for water management is improved.</p> <p>4) Irrigation information management technology is improved to monitor irrigation projects.</p> <p>5) Water management technology is disseminated to technical staff of Irrigation Department and farmers in test farm through training.</p>	<p>1-1) Proposal reports on improvement of main facilities and its operation and maintenance techniques are prepared by March 2004.</p> <p>1-2) Counterparts' technical capacity will be improved.</p> <p>2-1) Proposal reports on study methods for improvement of terminal facilities will be prepared by March 2004.</p> <p>2-2) Counterparts' technical capacity will be improved.</p> <p>3-1) Technical supporting system for water management is used by March 2004.</p> <p>3-2) Proposal Manuals for reservoir capacity survey are prepared by March 2004.</p> <p>3-3) Counterparts' technical capacity will be improved.</p> <p>4-1) Data collection and processing of irrigation projects will be started by March 2004.</p> <p>4-2) Monitoring on water management will be started by March 2004.</p> <p>4-3) Counterparts' technical capacity will be improved.</p> <p>5-1) 26 times of training for 790 ID staffs will be conducted by March 2004.</p> <p>5-2) 9 times of training for 460 farmers will be conducted by March 2004.</p> <p>5-3) Training master plan will be prepared and approved by ID by March 2003.</p>	<p>1-1) Annual report of ID 1-1) Project monitoring report</p> <p>1-2) Experts' interviews 1-2) Counterparts' interviews</p> <p>2-1) Annual report of ID 2-1) Project monitoring report</p> <p>2-2) Experts' interviews 2-2) Counterparts' interviews</p> <p>3-1) Annual report of ID 3-1) Project monitoring report 3-2) Annual report of ID 3-2) Project monitoring report 3-3) Experts' interviews 3-3) Counterparts' interviews</p> <p>4-1) Annual report of ID 4-1) Project monitoring report 4-2) Annual report of ID 4-2) Project monitoring report 4-3) Experts' interviews 4-3) Counterparts' interviews</p> <p>5-1) Annual report of ID 5-1) Project monitoring report 5-1) ID staff focus group 5-2) Annual report of ID 5-2) Project monitoring report 5-2) Farmer focus group 5-3) Annual report of ID 5-3) Project monitoring report</p>	<p>- The knowledge and experience acquired through the Project is continuously extended.</p>
--	---	--	--

2

<p>4. Activities</p> <p>1) Water Management for Main Facilities</p> <p>1-1) Survey and evaluation on present water management in model area</p> <p>1-2) Study on techniques to improve irrigation facilities</p> <p>1-3) Improvement of operation and maintenance techniques of irrigation facilities</p> <p>1-4) Preparation of materials for training</p> <p>2) Water Management for Terminal Facilities</p> <p>2-1) Survey and evaluation in present water management in study area</p> <p>2-2) Study on techniques to improve terminal facilities and water management in test farm</p> <p>2-3) Preparation of materials for training</p> <p>3) System Development</p> <p>3-1) Development of data base system of irrigation area</p> <p>3-2) Development of supporting programs for water management</p> <p>3-3) Improvement of monitoring method of water storage of reservoir</p> <p>3-4) Preparation of materials for training</p> <p>4) Irrigation Information Management</p> <p>4-1) Study on monitoring method of water management in existing irrigation projects</p> <p>4-2) Improvement of storage system of irrigation information</p> <p>4-3) Preparation of materials for training</p> <p>5) Training</p> <p>5-1) Implementation of training for the above four fields</p> <p>5-2) Formulation of training master plan</p>	<p>Input</p> <p>(Japanese Side)</p> <p>1. Dispatch of Experts</p> <p>(1) Long-term experts</p> <p>- Chief Advisor/ Irrigation Information Management</p> <p>- Coordinator/ Training</p> <p>- Water Management for Main facilities</p> <p>- Water Management for Terminal Facilities</p> <p>- System Development</p> <p>(2) Short-term Experts will be dispatched when necessity arises</p> <p>2. Provision of machinery and equipment</p> <p>3. Training of counterpart personnel in Japan</p> <p>4. Local cost</p> <p>(Myanmar Side)</p> <p>1. Counterparts</p> <p>(1) Project Director</p> <p>(2) Deputy Project Director</p> <p>(3) Project Manager</p> <p>(4) Two Assistant Directors</p> <p>(5) Counterparts for each experts</p> <p>(6) Management staff</p> <p>(7) Technical staff</p> <p>(8) Other staff as needed</p> <p>2. Land, building and facilities</p> <p>(1) Land and facilities for the Project</p> <p>(2) Office and other facilities for Japanese Experts</p> <p>(3) Facilities to keep provided machinery</p> <p>(4) Other facilities</p> <p>3. Local cost</p>	<p>- Same counterparts should be assigned more than two years</p> <p>- Institutional collaboration between Branches and Divisions in Irrigation Department</p> <p>- Institutional collaboration among Myanmar Agricultural Services, Settlement & Land Records Department, Department of Agriculture Planning, and Irrigation Department</p> <p>Pre-conditions</p> <p>- Land for test farm is prepared</p>
---	---	--

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI)
 Output 1: Irrigation technology of water management and maintenance in main facilities is improved. (As of June 2003)

Item No	Main activities mentioned in the TSI								Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						In-charge (s)	Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.	Water management for main facilities										Irrigation technology of water management and maintenance in main facilities is improved.	70%
1.1.	Survey and evaluation on present water management in model area										To improve the techniques of water management in the model area, the present water management is surveyed and evaluated.	90%

Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.1.1.	Collection of data concerning water management on Ngamoeyeik Project											
1.1.1.1	Project Plan	-----						Daw Than Than Oo	Project pre-feasibility report and project completion report have been collected.	Collected report. (Annex- 1) (Annex-2)		100%
1.1.1.2	Existing problems on water management	-----						U Aung Thu Kywe	Problems related to present water management have been collected from maintenance office and hearing from some farmers. Report preparation for problems on present water management was finished.	Report on present water management problem. (Annex- 10) (Annex-10-1)		100%
1.1.1.3	Operation manuals	-----						U Aung Thu Kywe	Reservoir regulation and operation rules have been collected.	Report on reservoir regulation and operation rules. (Annex - 3)		100%

A

Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.1.1.4	Water discharge of dam and distribution at each intake facilities							U Aung Thu Kywe	Daily dam released discharge data have been collected from 1995 to 2000,2001. There is no water distribution data for each intake.	Daily dam Released Discharge Data. (1995-2000) (Annex - 4) Data for 2001. (Annex-4-1)		100%
1.1.1.5	Present land utilization							Daw Than Than Oo	Yearly irrigated areas for each canal have been collected until year 1999.Canal wise irrigated area for summer paddy and other crops from year 2000 to 2002 was prepared .	Canal wise irrigated area until year 1999. (Annex - 5) Canal wise irrigated area for year 2000,01,02. (Annex-5-1)		100%
1.1.1.6	Irrigation and drainage system							Daw Than Than Oo	Irrigated areas for each canal have been collected. Canal wise irrigated areas, prepared by Maintenance Office were received.	Canal wise irrigated area for summer paddy and other crops. (Annex - 5) Report on canal data of Ngamoeyeik reservoir and irrigated area (Annex -17)		100%

A

Achievement of the project activities

Item No	Main activities mentioned in the TSI								Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						In-charge (s)	Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.1.2	Survey present water mangement situation on the field											100%
1.1.2.1	Cropping pattern							U Aung Thu Kywe	Actual cropping pattern for the last four years was received from Irrigation Information Management section.	Cropping pattern for last four years (1997 to 2000) in Ngamoeyeik Irrigation areas. (Annex - 15)		100%
1.1.2.2	Measurement of water distribution of each intake facilities							U Aung Bo Daw Than Than Oo U Aung Thu Kywe U Aye Min	Staff gauges were set up in Main canal, Left and Right main canal and each intakes. Water distributions were recorded every day in Irrigation season and preparation of the water distribution table was finished, based on the data recorded in last Dec, 99 to May, 00 before new gate installation and 2000-01,01-02 after new gate installation.	Daily water distribution data measured in 1999 - 2000. (Before providing gates) (Annex - 11) Daily water level data for 2000-01,02 (After new gate installation) (Annex-11-1)		100%

14

2

Achievement of the project activities

Item No	Main activities mentioned in the TSI								In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities		Period							Activities	Results/Outputs (A)		
	99	00	01	02	03	04							
1.1.2.3	Survey on structure of intake facilities		-----						U Aung Bo Daw Than Than Oo U Aye Min	Surveying of the structure location, sill level and opening sizes were carried out. Inventory of facilities has already been prepared.	Inventory of the facilities. (Annex - 6)		100%
1.1.2.4	Longitudinal and cross-section survey		-----	-----					U Aung Bo Daw Than Than Oo U Aye Min	LS, CS of Main canal, Left main canal RD 0+000 to 42+000, Left canal DY2 RD 0+000 to 42+500, Right main canal RD 0+000 to 52+000 have already been surveyed. Profiles and cross-sections have already been drawn. Canal cross section at six places were surveyed three times before irrigation, after irrigation and after rainy season, for study on sedimentation.	Canal longitudinal section data and drawing. (Annex -7) Canal cross section data and drawing. (Annex - 8) survey data for sedimentation. (Annex-18)		100%

10

7

Achievement of the project activities

Item No	Main activities mentioned in the TSI								In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						Activities		Results/Outputs (A)			
		99	00	01	02	03	04						
1.1.2.5	Measurement of water flow in canal								U Aung Bo Daw Than Than Oo U Aye Min	Flow measurements have already been carried out in Main canal and their intakes in 1999-00. Manning roughness coefficient in main and branch canal, relationship between H and Q was set up. Discharge measurement was also carried out in 2003, to check the some H-Q curve prepared in 1999-00 and modified the previous H-Q curve.	H-Q curve measured in canal for 1999-2000 and daily water discharge for each intake. (Annex-11) Modified H-Q curve, Daily water discharge data for 2000-01,02,03. (Annex-11-1)		100%
1.1.2.6	Survey on other water resources								U Aung Thu Kywe	Staff gauges have been set up in two creeks. Daily water levels were measured. And prepared H-Q curve. Measurement was carried on and arranged the measured data and prepared report. Report of survey on other water resources was prepared.	Measurement of daily water levels. Water flow measurement data, H-Q curve and daily flow rate data. Report of survey on other water resources. (Annex-19)		100%

Achievement of the project activities

Item No	Main activities mentioned in the TSI								Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						In-charge (s)	Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.1.3	Evaluation on present water management							U Aung Bo	The collected data, observed data and surveyed result data have been arranged. Present canal flow capacity were analyzed, present dam & intake operation were being studied. Discussion with ID maintenance office has been carried out to confirm the present water management, report is being prepared.	Result of 1.1.1 and 1.1.2. Report of the evaluation on present water management in model area (Annex-30)		80%
1	Study on techniques to improve irrigation facilities										The techniques to improve irrigation facilities are studied.	85%
1.2.1	Study to improve irrigation facilities											90%

Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.2.1.1	Study on flow capacity of canals		-----					U Aung Bo Daw Than Oo U Aye Min	Analysis method of canal flow capacity, non-uniform flow analysis, were introduced together with short term expert using prepared CS data. Analysis of canal flow capacity on MC, RMC, LMC, Dy2 were finished. Report on flow capacity analysis of canal was finished.	Analysis result of canal flow capacity on MC, RMC, LMC & Dy2. Report of non uniform flow analysis on canal flow capacity. (Annex-20)		100%
1.2.1.2	Study on water distribution facilities.		-----					U Aung Bo Daw Than Oo U Aung Thu Kywe U Aye Min	50 numbers of new intake gates were provided by JICA and installations of new gates were set up by ID Maintenance office. Some canal CSs of intakes were surveyed to set up weir box as a measuring facility. Report on weir box design was made and weir box was constructed in RMC DY-4. Position of every intake structure was checked.	Installed new intake gates, report of Hydraulic design calculation for weir box and installed weir box. (Annex-9) (Annex-21)		100%

➤ Achievement of the project activities

Item No	Main activities mentioned in the TSI								Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						In-charge (s)	Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.2.1.3	Study on leakage and sedimentation							U Aung Thu Kywe U Aung Bo U Aye Min	Canal cross-section at six places were chosen and measured to study the sedimentation during the period, after rainy season and before & after irrigation season. Seepage losses in MC,RMC,LMC and Distributary canals were measured.Report of seepage losess for Ngamoeyeik canal system is being prepared. Report of sedimentation for Ngamoeyeik canal system is being prepared	A result of canal cross-section at six places. Report of seepage losess for Ngamoeyeik canal system. (Annex-22-1) Sedimentation Report (Annex-22-2)		80%

M

Achievement of the project activities

Item No	Main activities mentioned in the TSI							Progress of the Project		Final target level (B)	A/B (%)	
	Activities	Period						In-charge (s)	Activities			Results/Outputs (A)
		99	00	01	02	03	04					
1.2.1.4	Study on improvement of facilities							U Aung Bo Daw Than Oo U Aye Min	Canal flow capacity was analyzed. Appropriate check structure and flow measurement device were studied during the short-term expert training. Suggestion of improvement for canal bank is being prepared. Report on weir box design was made and construction of weir box was finished. Application of unsteady flow model was learned from short term expert and applied it. Report on improvement of facilities is being prepared.	Analysis result of canal flow capacity. Having knowledge about check structure and flow measurement device. Report on improvement of facilities (Annex-27)	80%	
1.2.2	Making proposal report on improvement of main facilities.							U Aung Bo Aung Win Swe	Arrangement of collected materials. Proposal report on improvement of main facilities is being prepared.	Material arrangement for results of 1.2.1.1 1.2.1.2 1.2.1.3 1.2.1.4 (Annex-28)	85%	

➤ Achievement of the project activities

Item No	Main activities mentioned in the TSI								Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						In-charge (s)	Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1		Improvement of operation and maintenance techniques of irrigation facilities									The operation and maintenance techniques of irrigation facilities are improved.	60%
	1.3.1	Study to improve operation and maintenance techniques										80%

Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.3.1.1	Study on water distribution plan							U Aung Bo Daw Than Than Oo U Aung Thu Kyve	Present water distribution data of canals for the last two years were arranged. Discussion with the ID maintenance office was made. Planned area for 1999-00 and 2000-01 were collected. Irrigation water requirement for them was calculated based on the planned area and unit requirement. Water distribution plan for 2001-02 irrigation period was prepared. By using the technique of Model plan, demand side water distribution plan was introduced by short term expert. Water distribution plan for 2002-03 was prepared based on the planned areas and explained it to the Agricultural Supervising Committee, Water Distribution Committee and maintenance office responsible person.	Irrigation water requirement for each intake was calculated based on the planned area and unit requirement. Canalwise cultivated area (2002-03) Annex-5-2 water distribution plan(2001-02) and (2002-03) Annex-23 Annex-29		70%

D Achievement of the project activities

Item No	Main activities mentioned in the TSI								Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						In-charge (s)	Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.3.1.2	Study on Dam operation for water discharge							U Aung Bo U Aung Thu Kywe U Htay Aung Tint	The daily inflow and out flow for the last 6 years of the reservoir starting from 1995 to 2001 were collected. These data were arranged. Data collection for daily inflow and out flow was carried on until 2003. Auto water level gauge in reservoir and main canal have been setup. Previous Dam operation line was prepared based on the collected water level data. Daily plan discharge for dam released was prepared for 2001-02, 2002-03.	Arranged inflow and out flow data of reservoir. Daily dam operation line and Daily dam released discharge data for 2002 ,2003. (Annex-4-2) Report on dam operation is being prepared. (Annex-24)		80%

Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.3.1.3	Study on operation of distribution facilities							U Aung Bo Daw Than Than Oo U Aung Thu Kywe U Htay Aung Tint U Aye Min	<p>The leaf-let of Ngamoeyeik irrigation system was made. Diagram of Ngamoeyeik irrigation system for operation, diagram of decision procedure to tertiary unit were made and confirmed with ID maintenance office.</p> <p>Installation of auto water level gauges in left and right main canal has been done. Additional staff gauge 18 nos were provided by JICA and set up in intake canal in 2001-02. Discharge measurement was carried out in additional staff gauge points and prepared H-Q curves. 18 numbers of concrete footing, provided by JICA, were set up to fix the location and position of timber staff gauges. 5 numbers of additional Water Level Observing System were installed at LMC bifurcation and canal's tail portions in 2002-03. Daily water level data is being collected for 2002-03. Report of study on intake operation is being prepared.</p>	<p>Leaf-let for Ngamoeyeik irrigation sysetm. (Annex - 16)</p> <p>H-Q curves for additional staff gauge set up points and their location. (Annex-11-2)</p> <p>Daily water level data 2002-03 (Annex-11-3)</p> <p>Report on operation of intakes (Annex-25)</p>		80%

A Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.3.1.4	Utilization of operation record books							U Aung Thu Kywe	Operation and maintenance record book, and a format of intake operation record were made and confined with ID maintenance office to use.	Format of maintenance record book for intake. (Annex -12) Dam operation record book and intake operation record book. (Annex-12-1)		90%
1.3.2	Making trial of studied techniques											70%

Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.3.2.1	Operation on outlet of dam and distribution facilities			■	■	■	■	U Aung Bo Daw Than Than Oo U Aung Thu Kywe U Htay Aung Tint U Aye Min	Some intakes are operated by using new gates. Water flow in main canal and intake were measured by ID Hydrological branch from 2000-01 irrigation period after installation of new intake gates. Proper dam and intake operation was determined by unsteady flow model. Daily observed water distribution were compared with plan to find the cause of discrepancy. Water distribution plan was revised after being land prepared to reflect the actual water demand. Review report was prepared when irrigation period is over and discussed with maintenance office.	Operation of new intake gates. Review Report (Annex-31)		80%
1.3.2.2	Enforcement of operation data recording			■	■	■	■	U Aung Thu Kywe	Water distribution data has been recorded under newly installed intake gate operation. Reservoir water level has been recorded once a day. Daily water distribution data was recorded twice a day.	Water distribution data at intake. Operation data record book (Annex-32)		80%

A Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.3.2.3	Checking up of operation record book							U Aung Thu Kywe U Hlay Aung Tint U Aye Min	Record book is checked and input water level data and reservoir inflow, out flow data for storage in computer. Possibility difference of dam released discharge between observed data (using H-Q curve for staff gauge set up in Main Canal at RD 650ft) and calculated value (obtained by orifice formula) was tried with different coefficient data.	Comparison of water distribution (Annex-32)		80%

A Achievement of the project activities

Item No	Main activities mentioned in the TSI							In-charge (s)	Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period							Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1.3.2.4	Re-improvement of water management techniques							U Aung Win Swe U Aung Bo Daw Than Than Oo U Htay Aung Tint	To study the problems of 1.3.2.1 and 1.3.2.2 based on result 1.3.2.3. Basic operation rule for dam and distributary level has been defined. Area grouping and water distribution according to the priority of each group has been proposed. Discussion with maintenance office was made to use the same dam released discharge data between staff gauge and orifice gate opening. Main canal facilities operation was determined by means of simulation using unsteady flow model, taken into account the measured seepage losses in main canal, distributary canal and made field observation to reflect the actual condition in model.		60%	
1.3.3	Making proposal report on improvement of operation and maintenance techniques of main facilities							U Aung Bo U Aung Win Swe	Contents were made and arranged the results. Proposal report on improvement of operation and maintenance techniques of main facilities is being prepared.	Material arrangement for results of 1.3.1 1.3.2 (Annex-25)	40%	

a Achievement of the project activities

Item No	Main activities mentioned in the TSI								Progress of the Project		Final target level (B)	A/B (%)
	Activities	Period						In-charge (s)	Activities	Results/Outputs (A)		
		99	00	01	02	03	04					
1		Preparation of material for training									The material for training are prepared.	80%
	1.4.1	Study on water management instruction						U Aung Win Swe U Aung Thu Kywe Daw Than Than Oo U Aung Bo	Plan of training course was prepared. The subject of seminar for farmers was discussed with ID maintenance office and MAS. Seminars on effective use of irrigation water for farmers have been carried out eight times. The training for Bintha, Bingaung of ID staff was held three times. Technical book is being prepared.	Plan of training. Two courses of trainings was carried out. Technical book (Annex-33)		80%
	1.4.2	Study on instruction materials for water management						Daw Than Than Oo U Aung Thu Kywe U Htay Aung Tint	The pamphlet was prepared and distributed to the farmers and Hlegu maintenance staff personnel. The training materials for Bintha, Bingaung, were also prepared.	Pamphlet, training materials for farmers, Bingaung, Bintha. (Annex-13, 14,26)		80%

Indicates planned period of preliminary activities, major activities and follow-up activities, respectively.
Cooperation period of the ITC project Phase II is from April 1, 1999 to March 31, 2004.

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output 2: Study method for water management of terminal irrigation system is improved

(As of June 2003)

Main activities mentioned in the TSI						Progress of the Project		Final target level (B)	A/B (%)	
Activities	Period					In-charge (s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
2. Water Management for Terminal Facilities Field							Irrigation technology in terminal facilities was improved by survey and analysis of present condition, construction of test farm and implementation of training.	Irrigation technology in terminal facilities improved focused on water management.	70%	
2.1 Survey and evaluation on present water management in study area							Evaluation on present water management in study area were implemented by using existing data and survey result.	Survey and evaluation on present water management in study area are implemented.	95%	
2.1.1 Evaluation of present situation by using of existing data									100%	
2.1.1.1 Collection of soil map						U San Win Naing	Collected report for present land use of Ngamoeyek Dam Project Area from Irrigation Department (Head Office) and considered the soil maps and specification.	Report "Soil and Land Classification of Ngamoeyek Dam Project" (May.2000)	To collect soil maps	100%
2.1.1.2 Water requirement of terminal farm						U Aung Myo Swe	Collected necessary data from Maintenance Office (Hlegu) and analyzed data --Basic value of design water requirement --Design and actual water requirement of each canal	Report "Water Requirement of Terminal Farm" (Dec.2000)	To collect and analyze the data concerning to water requirement in study area	100%
2.1.1.3 Irrigated area of study area						U Myo Zaw Zaw	Collected necessary data from maintenance Office (Hlegu) and Settlement and Land Record Department (Hlegu) analyzed data. --Design and actual water requirement of each canal --Irrigable and irrigated area of each canal	Report "Irrigated area of study area" (May.2000)	To collect and analyze the data concerning to irrigated area of study area	100%
2.1.1.4 Water distribution of terminal farm						U San Win Naing	Collected necessary data from maintenance Office (Hlegu) and WM-1 section and compared data. --Construction condition of water courses --Irrigable and irrigated area of each canal	Report "Water distribution of terminal farm" (Jun.2001)	To collect and analyze the data concerning to water distribution of terminal farm	100%
2.1.1.5 Water users' association of terminal farm						Daw Myint Myint Than	Collected necessary data from maintenance Office (Hlegu) and observed data. --Organization, duties and activities of water distribution committee --Organization, duties and activities of water users' association	Report "Water users' association" (May.2000)	To grasp the organization, the duties, and the activities of W.U.A concerning to study area.	100%

A Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (2/5)

(As of June 2003)

Main activities mentioned in the TSI						Progress of the Project		Final target level (B)	A/B (%)	
Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
2.1.2 Evaluation of present situation by using survey result in study area									90%	
2.1.2.1 Topographic survey						Daw Myint Myint Than U San Win Naing U Aung Than Oo U Myo Zaw Zaw	Carried out the detail topographic survey in intensive and extensive type test farm.	Maps "Contour maps in existing condition" (Mar.2000)	To carry out the topographic survey in Intensive and Extensive type test farm and to make the maps	100%
2.1.2.2 Survey on terminal facilities condition						U Myo Zaw Zaw	Surveyed the terminal facilities condition in study area and grasped the problems on water management.	Report "Survey on terminal facilities" (Jan.2001)	To survey the terminal facilities condition and grasp the problems on water management.	100%
2.1.2.3 Measurement of water flow						Daw Myint Myint Than U Aung Myo Swe U San Win Naing U Myo Zaw Zaw	Measured water flow in study area by using partial flume, Notch Weir and current meter and grasped water distribution condition in study area	Report "Measured data for water flow" (May.2001)	To measure water flow discharge and grasp actual water distribution condition in study area.	100%
2.1.2.4 Survey on attainment time of irrigation water						U San Win Naing	Surveyed attainment time in study area according to farmers' information.	Report "Survey on attainment time of irrigation water" (Dec.2000)	To survey attainment time of terminal farm in study area	100%
2.1.2.5 Measurement of water requirement rate						U Aung Myo Swe U Myo Zaw Zaw	Measured water requirement rate by using N-type meter, moving the plots in study area. Under preparation of report	Report "Water Requirement Rate in Study Area" (Feb.2001)	To measure water requirement rate in study area	70%
2.1.2.6 Survey on management of study area						U Myo Zaw Zaw	Collected necessary data from concerned departments, surveyed and grasped the present water management of study area.	Report "Survey on management of Study Area" (Jun.2001)	To survey and grasp the present water management of study area	100%

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (4/5)
 Output 2: Study method for water management of terminal irrigation system is improved

(As of June 2003)

Main activities mentioned in the TSI						Progress of the Project		Final target level (B)	A/B (%)
Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03				
2.2.2 Observation of test farm after construction									80%
2.2.2.1 Survey on terminal facilities condition			-----			Daw Myint Myint Than U Aung Myo Swe U San Win Naing U Myo Zaw Zaw	Utilization and management condition of terminal facilities were surveyed after construction. Irrigated area of each water course was surveyed and distinguished in Extensive type test farm. Water course was repaired by using Mg white and that effectiveness was verified. Water distribution condition and irrigation rotation condition were grasped by using wooden stick. A report is being made now.	To survey and grasp terminal facilities condition after construction	80%
2.2.2.2 Measurement of water flow			-----			Dawn Mint Myint Than U Aung Myo Swe U San Win Naing U Myo Zaw Zaw	Water flow was measured in sub-canals by using auto level gauges and in water course by using current meter. Seepage loss was measured in water course. A report is being made now.	To measure water flow and grasp water distribution condition	80%
2.2.2.3 Survey on attainment time of irrigation water			-----			U San Win Naing U Ney Win	For considering the attainment time and water course density, beginning of irrigation date, puddling date and seeding date of plots were measured. A report is being made now.	To measure attainment time of irrigation water after construction	70%
2.2.2.4 Measurement of water requirement rate			-----			U Aung Myo Swe U Myo Zaw Zaw	Water requirement rate in fixed plot was continuously measured by using N-type meter. Water requirement rate in other plots was measured to compare with fixed plot. A report is being made now.	To measure water requirement rate after construction	90%
2.2.3 Making of proposal report of water management for terminal facilities									
2.2.3.1 Analysis of result of observation			-----			Daw Myint Myint Than U Aung Myo Swe U San Win Naing U Ney Win U Myo Zaw Zaw	After making above reports, the results of analysis will be summarized.	To analyze the result of observation	60%

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (5/5)
 Output 2: Study method for water management of terminal irrigation system is improved

(As of June 2003)

Main activities mentioned in the TSI						Progress of the Project		Final target level (B)	A/B (%)	
Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
2.2.3.2 Study on arrangement of water course						Daw Myint Myint Than U San Win Naing U Ney Win	Arrangement and density of water course will be studied after analyzing the attainment time, water requirement, farming condition, questionnaires from farmers, construction cost, maintenance cost and so on. A proposal report will be made.	To study the feature of different arrangement and density of water course and to make a proposal report	20%	
2.2.3.3 Study on water requirement in various levels of water course density						Daw Myint Myint Than U San Win Naing U Ney Win			20%	
2.2.3.4 Study on proposal report						Daw Myint Myint Than U Aung Myo Swe U San Win Naing U Ney Win U Myo Zaw Zaw			20%	
2.3 Preparation of materials for Training						Daw Myint Myint Than U Aung Myo Swe U San Win Naing U Ney Win U Myo Zaw Zaw	Materials for farmers' training were made. Basic Training Course for Farmers in Test Farm was implemented 12 times. Refresher Course for Farmers in Test Farm was implemented 5 times. MAS cooperated on farming in farmers' training. Questionnaires to farmers concerning the farming and water management were conducted. On-farm water management training for CI & ACI was implemented.	Farmers and maintenance office staffs improved the consciousness on water management by training. Training materials are made as follows. -Training materials for farmers -Training materials for CI & ACI -Cropping calendar -Pamphlet on water management for farmers -Installation of 5 Notice boards in test farm	To prepare materials for training	80%
Prospect of Sustainability										
2.1 Survey and evaluation on present water management in study area						-Counter parts improved their abilities of survey and analysis by conducting survey and evaluation on present water management in study area. And they could consider the problems and the improvement method. It seems that appropriate survey will be implemented in other project area by using these techniques.				
2.2 Study on techniques to improve terminal facilities and water management in test farm						-Counterparts learned the surveying, the design and the construction techniques by constructing Test Farm. And they learned how to measure water flow and water requirement rate for grasping basic factors of water requirement. It seems that these techniques will be applied to other project area. On the other hand, concerning the study on arrangement and density of water course it is worried that these standards will not be established by finish time because of a delay of attainment time survey, but after these standards will be established, this techniques will be spread to other areas.				
2.3 Preparation of materials for Training						-By making training materials, counterparts could rise their comprehensive faculty about water management for terminal facilities. And farmers who must maintain terminal facilities by themselves improved their consciousness on water management by farmers' training. It seems that these training materials will be used to other areas.				

Notes: Plan Actual ———

Achievement of the Project Activities of ITC Project Phase II System Development Field

Output : Supporting system for water management is improved.

(As of June 2003)

Main activities mentioned in the TSI					Progress of the Project		Final target level (B)	A/B (%)
Activities	Period				In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02			03	
3. System Development								92
3.1 Development of database system of irrigation area							C/Ps could learn how to use and how to develop database system for water management	Technical supporting system for water management is used by March 2004. 95
3.1.1 Data management system using existing data system and supplemental survey					U Thuang Htike U Myo Aung			95
3.1.1.1 Making land use ledger system						- Modification of the database system developed in Phase I for the Ngamoeyeik irrigation area. - Addition of features and items (fields) for the system. - Hand over the system to Irrigation information section and gave necessary assistance for data input and usage of the system.	C/Ps could study how to develop and improve land ledger system through the compilation of following materials: 1. Land Use Ledger System 2. User Manual 3. Developer Manual (March 2003)	Supporting system for water management is improved To develop the database system for irrigation area 90
3.1.1.2 Addition of various management parameters to the land use ledger system after survey								
3.1.2 Study on introduction of other measuring methods on irrigable and irrigated area					U Myo Aung U Kyaw Min Naing U Kyaw Lin Oo		C/P could get skill on measurement methods on irrigable and irrigated area	To get skill on measurement methods on irrigable and irrigated area 95
3.1.2.1 Introduction and training of advanced measuring methods					U Thuang Htike Daw Than Win U Zaw Wan	- Ngamoeyeik Main Canal Alignment Survey in April 2000. - Short-term expert training for Remote Sensing technology (December 2000 and October 2002) - Estimation of Irrigated Area in Ngamoeyeik irrigation area using satellite images and remote sensing software, TNT mips. - GPS training received in March 2001 and in March 2002 - Ground Truth Data collection in Ngamoeyeik irrigation area for the estimation of irrigated area using satellite images (Nov.2002 to May 2003) - Remote sensing C/P training in	C/Ps could get skill on measurement methods on irrigable and irrigated area through compilation of following materials: - Report on Ngamoeyeik Main Canal Alignment GPS Survey" - GPS Training Reports - Presentaion of 'Irrigated area in Ngamoeyeik irrigation area' (Oct. 2002) - Coordinates conversion program 'WGS2MYA' (May. 2003)	100
3.1.2.2 Practice of these measuring methods to improve surveying efficiency								90

Achievement of the project activities

Achievement of the Project Activities of ITC Project Phase II System Development Field

Output : Supporting system for water management is improved.

(As of June 2003)

Main activities mentioned in the TSI					Progress of the Project		Final target level (B)	A/B (%)		
Activities	Period				In-charge(s)	Activities			Results/Outputs (A)	
	99	00	01	02			03			
3.2 Development of supporting programs for water management							C/Ps could learn how to use and how to develop supporting system for water mangment.	Technical supporting system for water management is used by March 2004.	91	
3.2.1 Hydraulic Phenomena Simulation for operation of water management									95	
3.2.1.1 Examination of the program developed in Phase I			---			U Kyaw Lin Oo U Thaug Hlike Daw Than Win	Examined the programs developed in the Phase I Project period.	C/Ps could improve required skill for developing Unsteady Flow calculation program	To develop the supporting programs for water management	100
3.2.1.2 Improvement of data analysis technique by using computer and other appliances				---			- improved the program using Visual Basic and create "Unsteady Flow Program"		To improve required skill on data analysis practice	90
3.2.2 Calculation of water travelling time in canal								C/Ps could calculate water reaching time in canal through the compilation of following materials:	Water reaching time at specified points	90
3.2.2.1 Measurement of water reaching time at the distribution points in main and left canals			---				-Measurement of water reaching time (Dec.2001)	- Report on "Water Reaching Time Measurement in Ngamoeyek Main Canal" (May 2002)		90
3.2.2.2 Analysis of the obtained data by using computer				---			Development of Unsteady Flow Program	- Unsteady Flow Program "Hydraulic Analysis (Portal)"(May 2002)		90
3.2.3 Water Balance Simulation for study of storage of irrigated fields								C/Ps could use and develop water balance simulation program through the compilation of followig materials:	Water balance simulation program	100
3.2.3.1 Study of Japanese water management programs			---				- Short-term expert training for Water Balance Simulation Program development in September 2001.	- Report on "Comparison of Japanese Water Management Program and the Programs Utilized in Myanmar.		100
3.2.3.2 Comparison of Japanese programs with the programs utilized in Myanmar			---				- study of Japanese Water Management Program and the Programs Utilized in Myanmar.	- Water Balance Simulation program - Presentation of the sample calculation at the ID Head Office in October 2001.		100
3.2.3.3 Revising and improvement of the program by reforming program structure				---			- Development of Water Balance Simulation Program	- Evapotranspiration Calculation Program by FAO method (June 2003)		100

Achievement of the project activities

Achievement of the Project Activities of ITC Project Phase II System Development Field

Output : Supporting system for water management is improved.

(As of June 2003)

Main activities mentioned in the TSI					Progress of the Project		Final target level (B)	A/B (%)	
Activities	Period				In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02			03		
3.3 Improvement of monitoring method of water storage of reservoir							C/PS could improve the monitoring method of water storage of reservoir	Proposal Manual for reservoir capacity survey are prepared by March 2004.	90
3.3.1 Survey on water inflow of reservoir					U Myo Aung U Kyaw Min Naing U Kyaw Lin Oo U Thauung Htike	- Collecting rainfall data and analysis	C/PS could improve the monitoring method of water storage through the compilation of	To improve the monitoring method of water storage	90
3.3.2 Survey on water discharge of reservoir					Daw Than Win U Zaw Wan	- Data collection of inflow of Ngamoeyeik reservoir and analysis	- report "Inflow Analysis for Ngamoeyeik Reservoir" - Report on 'Inflow Analysis for Ngamoeyeik Reservoir' - Compilation of reference manual 'Techniques for Inflow Analysis'		90
3.3.3 Study on measurement method of dam capacity by ordinary survey method						Digitizing Ngamoeyeik basin topomap, image enhancement and area and volume estimation	- report and manual on "Dam Capacity Measurement by conventional method"	measured dam capacity	90
3.3.4 Survey on introduction of advanced methods of dam capacity measurement						- GPS and echo sounding survey for Ngamoeyeik Reservoir Capacity Measurement (Jan. 2002)	- Report and presentaiton on 'Ngamoeyeik Reservoir Capacity Measurement by Advanced Measurement Method'		90
3.4 Preparation of materials for training					U Myo Aung U Kyaw Min Naing U Kyaw Lin Oo U Thauung Htike U Zaw Wan	- Collection of Manuals, Lecture Notes and reference materials output from the tasks of System Development.	- Above mentioned manuals and Remote Sensing Technology and GPS Survey lecture notes and Reference documents are ready	Counterparts' technical ability will be improved	90
Prospect of sustainability					3-1 Land Use Ledger system will be introduced to the concerned organizations such as Maintenance Office for systematic irrigation data storage and retrieval. Maintenance and upgrade of the system may be ensued by observing the reference materials, User Manual and Developer Manual, by the user. 3-2 Water Balance Simulation Program, Hydraulic Analysis (Portal) Program and Inflow Analysis Program can be studied using Manuals and reports of the programs. 3-3 Reports and manuals of Ngamoeyeik Reservoir Capacity Measurement by conventional method and Advanced Method can be referred for reservoir capacity and sedimentation measurement techniques. 3-4 Training materials such as Remote Sensing software and reference CDs and documents, GPS Training notes and reports will be helpful for learners concerning with GPS survey and remote sensing applications.				

Notes: ----- Plan - Actual

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Project Activities	Period					In-charge(s)	Progress of the Project		Final target level (B)	A/B (%)
	99	00	01	02	03		Activities	Results/Outputs (A)		
4. Irrigation Information Management Field.									Irrigation information management technology is improved to monitor irrigation projects.	70
4.1. Study on monitoring method of water management in existing irrigation project.									Proposal reports on monitoring method of water management.	70
4.1.1. Study on water management monitoring method.										100
4.1.1.1 Preparation of study plan.						U Soe Tun Aung U Zaw Zaw Latt	- Making study plan on water management monitoring method.	- Study Plan (Attachment - 1)	- To make study plan on water management monitoring method .	100
4.1.1.2 Collection of information on water management monitoring method.						U Soe Tun Aung U Zaw Zaw Latt	- Collection of informations on water management monitoring method at Ngamoeyeik Irrigation Project. - Study of existing manual and instruction.	- Information list. (Attachment - 2)	- To collect Informations and study their present condition.	100

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Tentative Schedule of Implementation						Progress of the Project		Final target level (B)	A/B (%)	
Project Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
4.1.2.2 Collection of data on irrigation projects and projects areas.						U Soe Tun Aung U Zaw Zaw Latt	- Collection of Monthly dam released discharge of existing irrigation projects for the years of 1996, 97, 98.	- Monthly dam released discharged of irrigation projects(114- Nos) (Attachment - 4)	- To collect data.	100
							- Collection of daily dam released discharge of Ngamoeyeik Irrigation Project for the years of 2002. - Collection of yearly actual irrigated area form B-113 of Ngamoeyeik Irrigation Project for the years 2002. - Collection of Monthly dam released discharge of existing irrigation projects for the years of 1999,00,01 and 02. - Collection of Yearly irrigated area of rainy season paddy and summer paddy at existing Irrigation Projects benifical area. - Plan to extend in next target areas Tabula, Mazin and Zalathlaw.	- Daily dam released discharge of Ngamoeyeik Irrigation Project for the year of 2002. - Yearly irrigated area of Ngamoeyeik Irrigation Project for the year of 2002. - In flow and out flow data of irrigation projects in Myanmar. (Attachment - 22) - Cultivation of rainy season paddy and summer paddy for irrigation projects in Myanmar. (Attachment - 23)	- To collect the latest data and information continuously on Ngamoeyeik Project and irrigation projects.	*
4.1.3. Study on water management condition survey system and test survey of it.										50
4.1.3.1 Investigation on actual condition of water management.						U Soe Tun Aung U Zaw Zaw Latt	- Investigation on actual condition of water managemnt at Ngamoeyeik Irrigation Project based on- (1) Water Supply Control System. (2) Information regarding to present condition of water management monitoring method.	- Mr. OCHII Report on the Improvement of Water Management in Ngamoeyeik Irrigation Project. (Attachment - 31)	- To investigate actual condition of water anagement.	100

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Tentative Schedule of Implementation						Progress of the Project		Final target level (B)	A/B (%)	
Project Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
4.1.3.2 Study on water management condition survey system.			—			U Soe Tun Aung U Zaw Zaw Latt	- Making questionnaires for water management in irrigation projects. - Collection of activities on water distribution committee, etc during irrigation season.	- Questionnaires for Water Management Condition. (Attachment - 13, 19) - Memo	- To make survey system for monitoring of Water management condition.	100
4.1.3.3 Implementation of test survey.				—		U Soe Tun Aung U Zaw Zaw Latt	- Test survey of water management condition survey system. - Attending water distribution committee, etc and collection of activities of committee - Evaluating activities.	- Field Trip Report of Kabo with Dr. KANAYA. (Attachment - 6) - Field Trip Report of Myothit with Mr. ISHIDA (Attachment - 16) - Answers from CI and ACI on Questionnaires. (Attachment - 27) - Memo of meetings. (Attachment - 34)	- To implement test survey and make recommendation.	50
4.1.3.4 Improvement of the water management condition survey system and extension of it.				—		U Soe Tun Aung U Zaw Zaw Latt	- Improvement of the survey system based on the results of test surveys. - Implementation of improved survey system.	- Review of survey system.	- To finalize the water management condition survey system.	20
4.1.4. Study on improvement method of irrigation facilities.										80
4.1.4.1 Analysis of water utilization data information.			—			U Soe Tun Aung U Zaw Zaw Latt	- Actual water utilization data information for intensive type test farm and other area in Ngamoeyeik Irrigation Project.	- Memo on water utilization. (Attachment - 32)	- To analyse water utilization data information.	100

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Tentative Schedule of Implementation						Progress of the Project		Final target level (B)	A/B (%)	
Project Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
4.1.4.2 Check-up of subjects to be improved.						U Soe Tun Aung U Zaw Zaw Latt	- The function and effectiveness of Watercourse and Field Ditch have been checked up as the subject to be improved.	- Myothit Field Trip Report (Attachment - 16) - Coparative statement of water utilization and the condition of Watercourses and Field Ditch.	- Informations for check up of subjects.	100
4.1.4.3 Information study on the improvement method of irrigation facilities.						U Soe Tun Aung U Zaw Zaw Latt	-Field trips to Zaung Tu Irrigation Project. -Study on existing manual, instructions,circulars and making training materials on Field Ditch.	- Report on Zaung Tu irrigation project. (Attachment - 33) - Training materials of CI & ACI and SAE.	- To collect information and disseminate to Government Officials and farmers through training.	80
4.1.5. Study on function of water users' association.										60
4.1.5.1 Making study plan.						U Soe Tun Aung U Zaw Zaw Latt	- Making study plan on function of water users' association.	-Study Plan. (Attachment - 5)	-To make study plan on Function of water users' association .	100
4.1.5.2 Field observation and investigation.						U Soe Tun Aung U Zaw Zaw Latt	- Field observation and investigation on Ngamoeyeik Irrigation Project. - Field observation and investigation on mature and well functioned irrigation projects to compare with Ngamoeyeik irrigation project.	- Field Trip to Theechauk Weir Irrigation Project with Mr. SUKATANI and Report. (Attachment - 6-a) - Field Trip to Kabo Weir Project with Dr. KANAYA and Report. (Attachment - 6-b) - Field Trip to Myothit Township with Mr.ISHIDA and Report. (Attachment - 16)	- To study the institution and function of water users' association in irrigation projects.	100

A Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Tentative Schedule of Implementation						Progress of the Project		Final target level (B)	A/B (%)	
Project Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
4.1.5.3 Information study on function of water user's association.						U Soe Tun Aung U Zaw Zaw Latt	- Information Study. - Making questionnaires for collecting information on water users' association.	- Questionnaires. (Attachment - 14) - Answers of CI and ACI. (Attachment - 27) - Institution and functions of water users' association in Ngamoeyeik Irrigation Project. (Attachment - 25)	- To collect information and evaluate them on water users' association and report.	50
4.2. Improvement of storage system of irrigation information.									Proposal reports on improvement of storage system of irrigation facilities.	60
4.2.1. Selection and collection of project design reference.										100
4.2.1.1 Study on necessary information of design reference.						U Zaw Zaw Latt U Soe Tun Aung	- Consideration and study of necessary information on design reference - Preparation of necessary information list.	-Necessary information list. (Attachment - 17)	-To support data collection based on information list on design reference	100
4.2.1.2 Information collection on design reference.						U Zaw Zaw Latt U Soe Tun Aung	- Collection of design reference for Ngamoeyeik project. - Some information are still missing.	- Collected information list. (Attachment - 7) - Storage of collected information.	-To collect necessary design reference and storage of them.	100
4.2.2. Selection and collection of project construction reference.										100

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Project Activities		Period					In-charge(s)	Progress of the Project		Final target level (B)	A/B (%)
		99	00	01	02	03		Activities	Results/Outputs (A)		
	4.2.2.1 Study on necessary information of construction reference.						U Zaw Zaw Latt U Soe Tun Aung	- Consideration and study of necessary information on construction reference . - Preparation of necessary information list	Necessary information list. (Attachment - 18)	-To support data collection based on information list of construction reference.	100
	4.2.2.2 Information collection of irrigation facilities constructed by the project.						U Zaw Zaw Latt U Soe Tun Aung	- Collection of information on construction reference for Ngamoeyeik Irrigation Project. - Collection of salient data for completed irrigation projects - Some information are still missing.	- Collected information list. (Attachment - 8) - Storage of collected information.	-To collect necessary construction reference and storage of them	100
	4.2.2.3 Information collection of irrigation facilities constructed by farmers in the project site.						U Zaw Zaw Latt U Soe Tun Aung	- Collection of Irrigation form B-113 which shows water courses of each canals and their irrigated area for irrigation seasons. - Making canal wise water course list.	- B-113 Form, Yearly canal wise and water course wise irrigated area. (Attachment - 3-b) - Total irrigated area of the project. - Register of water course for Ngamoeyeik project (Attachment - 9)	- To collect the irrigation facilities constructed by farmers (water course) - To make watercourse list	100
	4.2.3. Development and maintenance of storage system for design study.										50

Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Tentative Schedule of Implementation		Period					In-charge(s)	Progress of the Project		Final target level (B)	A/B (%)
		99	00	01	02	03		Activities	Results/Outputs (A)		
	4.2.3.1 Investigation on actual condition of irrigation data storage.						U Zaw Zaw Latt U Soe Tun Aung	- Observation and investigation to grasp the actual condition of present data storage. - Preparation of reports	- Report on data storage media selection based on present data processing and storage system. (Attachment - 10) - Report on present condition of data storage. (Attachment - 11)	- To support the development and maintenance of storage system. - To investigate the actual condition of data storage in I.D	100
	4.2.3.2 Development of the data storage system and study on the method to maintain and manage the system.						U Zaw Zaw Latt U Soe Tun Aung	- Proposal for storage of the final design drawings of irrigation projects in CD-R media. - Study of drawing storage system by using storage software. - Storage of completed irrigation projects - Formation of suitable storage system of irrigation area data.	- Meeting minutes of Irrigation Design Authority - Storage of collected drawings and maps not only as hard copy but also as soft copy. - Irrigation Project Data Form (Dam) (Attachment - 15) - Arrangement of salient data of irrigation projects (Attachment - 35) - Land Use Ledger System. (Attachment - 21)	-Development and maintenance of storage system.	50
	4.2.3.3 Implementation of design study.						U Zaw Zaw Latt U Soe Tun Aung	- Test run and use of Land Use Ledger System for Ngamoeyeik area - Modification of Irrigation Project Data Form (Dam) - Inputting the completed irrigation projects	(1) Land Use Ledger System Version -1 (Attachment - 21) (2) Modified Irrigation Project Data Form (Dam) (Attachment - 15) (3) Salient data of irrigation projects sorted by opening date, height and locality (Attachment - 35)	- To implement design Study (i.e Application of proposed system)	50

Achievement of the project activities

7 Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Tentative Schedule of Implementation						Progress of the Project		Final target level (B)	A/B (%)	
Project Activities	Period					In-charge(s)	Activities			Results/Outputs (A)
	99	00	01	02	03					
4.2.3.4 Making guidance						U Zaw Zaw Latt U Soe Tun Aung	Making Guidance.	- Guidance on Land Use Ledger System. (Attachment-21)	- Making guidance on storage system.	50
4.2.3.5 Report on improvement of the data storage system						U Zaw Zaw Latt U Soe Tun Aung	-Consideration and study to prepare report on improvement of data storage system.		-Proposal Report on improvement of storage system of irrigation information.	10
4.3 Preparation of materials for						- U Soe Tun Aung - U Zaw Zaw Latt	- Preparation of training materials for CI & ACI,SAE, MAS staffs and farmers.	- CI and ACI Training Materials. (Attachment - 26 a) -SAE Training Materials. (Attachment - 24) - MAS Staff training materials. - Farmers training materials. - Modification of training materials.	- To prepare the training materials for Staffs and farmers.	80
							* Number of trainings - One time Lecture at training of CI and ACI from Yangon Division. - Two times Lecture at training of CI and ACI from all over Myanmar. - One time Lecture at training of SAE. - Three times lectures at farmers training. - One time lecture at MAS staff training.	* Number of trainings finished - One time Lecture at training. - One time Lecture at training. - Not yet. - Three times lectures. - One time lecture.		

2 Achievement of the project activities

Achievement of the Project Activities of the Irrigation Technology Center Project Phase II in accordance with its Tentative Schedule of Implementation (TSI) (1/5)
 Output : Irrigation Information Management Technology is improved to monitor Irrigation Projects. (As of June 2003)

Project Activities	Period					In-charge(s)	Progress of the Project		Final target level (B)	A/B (%)
	99	00	01	02	03		Activities	Results/Outputs (A)		
Prospects of sustainability.										
4.1 Study on monitoring method of water management in existion irrigation projects.	(1)Collection of information, evaluation of present monitoring method, water management condition survey system, improvement method of irrigation facilities and study on function of water users' association on monitoring method of water management will assists for improvement of irrigation information management technology to monitor irrigation projects.									
4.2 Improvement of storage system of irrigation information.	(2)Selection and collection of references, development and maintenance of storage system will assists for improvement of irrigation information management technology to monitor irrigation projects.									
4.3 Preparation of materials for training.	(3)Training materials for SAE,CI&ACI,MAS Staffs and farmers will be attached in Technical Book as a referwence and to extend the training on water management.									

Achievement of the Project Activities

Output - Water Management Technology is disseminated to technical staff of Irrigation Department and farmers in test farm through training.

June 2003

Main activities mentioned in the Project						Progress of the Project		Final target level (B)	A/B	
Activities	Period					In-charge(s)	Activities			Result/Output (A)
	99	00	01	02	03					
5.1 Implementation of Training for Water Management							Water Management Techniques were disseminated through training.	To implement the water management Training.	90%	
5.1.1 Preparation of implementation plan						U Aung Naing & Daw Aye Aye Hlaing	Study the present condition of water management training implementation in Myanmar and Prepared the report & Plans for effective water management training implementation.	# Course settlement Plan and Detailed Implementation for Water Management Training # Study report	Prepared the plans (Course settlement plan & Detailed implementation plan) for proper Water Management Training implementation	100%
5.1.1.1 Study on present condition	****						Made Interview with farmers. Collected the data from conducted Water Management Training (Conducted by UNDP). Prepared study report on Water management Training Implementation.	Study report on Water management Training Implementation. (March, 2000)	Study report is prepared to make course settlement plan and detailed implementation plan	100%
5.1.1.2 Course settlement plan						Course settlement plan was prepared with the discussion of other technical fields in ITC. Contents of the plan are mentioned as follows. Course name, objective, participants level & no., duration, location, teaching materials & equipments	Course settlement Plan (September, 2000)	Course settlement Plan will be prepared for all water management training .	100%
5.1.1.3 Detailed implementation plan						According to course settlement plan, detailed implementation plan for each training was prepared including with the following items. Subject contents, detailed program	Detailed implementation plan (September, 2001)	Detail Implementation Plan for each of course will be prepared.	100%
5.1.2 Preparation of training facilities					U Aung Naing & Daw Aye Aye Hlaing	It was ensure that Test farms (Intensive & Extensive), Briefing hall & other ITC facilities can be use as training facilities in water management training implementation.	By using those facilities, ITC has been conducting Water Management Training Courses. (Conducted training lists are detaily mentioned in item 5.1.4)	To prepare the Training facilities for each Water Management Training.	100%

A

Achievement of the Project Activities

Output - Water Management Technology is disseminated to technical staff of Irrigation Department and farmers in test farm through training.

June 2003

Main activities mentioned in the Project						Progress of the Project		Final target level (B)	A/B	
Activities	Period					In-charge(s)	Activities			Result/Output (A)
	99	00	01	02	03					
5.1.3 Preparation of teaching materials						U Aung Naing & Daw Aye Aye Hlaing	Prepared teaching materials, pamphlets, handouts, powerpoint slides. Counterpart has been Learning software for some editing to change technical video into CD.	#Conducted WMT lecture notes, #Reference Books and CD #Counterpart edited & changed some video tape to CD.	To prepare the proper teaching materials to distribute materials effectively and easy to refer.	95%
5.1.4 Implementation of water management training						U Aung Naing & Daw Aye Aye Hlaing	Prepared the proposal report, completion report and other necessity for the implementation of Water Management Training smoothly and efficiently with the cooperation of the concerned Sections and Departments.	Total (47) nos of training courses are conducted and altogether, (1764) participants were attended in those training courses. Through these training water management techniques were disseminated.	To disseminate proper water management techniques through water management training	90%
5.1.4.1 Basic course for farmers							Following training course were conducted with MAS and Maintainance Office of Yangon Division for farmer through the ITC Phase II Project. # Seminar on Fundamental Water Management: 1time # Basic Training Course for Farmers in Test Farm (Intensive & Extensive) Area: 12 times	Through trainings knowledge of basic water management techniques and cultivation techniques were disseminated. Total 25 times and 752 participants.	- To disseminate proper WM techniques to farmer in Ngamoeyeik Irrigation System	95%
							# Refresher Course for Farmers in Test Farm (Intensive & Extensive) Area: 5 times # Effective use of irrigation water for farmers in Ngamoeyeik area: 7 times			
5.1.4.2 Basic course for ID staff							Following training course were conducted for ID staffs through the ITC phase II Project. # Effective use of irrigation water for Binthar & Bingaung in Ngamoeyeik area: 3 times	- Concerned ID staff understand effective use of irrigation water, basic irrigation information management and operation of irrigation system, How to effectively use GPS and Basic knowledge on Mechantronics.	- To extend the technology concerned to Irrigation works through ITC activities.	90%

Achievement of the Project Activities

Output - Water Management Technology is disseminated to technical staff of Irrigation Department and farmers in test farm through training.

June 2003

Main activities mentioned in the Project						Progress of the Project		Final target level (B)	A/B
Activities	Period				In-charge(s)	Activities	Result/Output (A)		
	99	00	01	02				03	
						# Basic Irrigation Information Management and On-farm water management for CI & ACI -1 times # GPS Training - 1 times # Topcon Position System Legal E Post Processing and RTK GPS Training -1 times # Basic Irrigation Information Management for CI & ACI- 1 times # Basic Mechatoronics Course -1 times.	Total 8 times and 212 participants		
5.1.4.3 Special Course of each technical field						Total 14 course were conducted by Short-Term Expert through five technical fields of ITC phase II Project. 1. Water Management I field-6 times 2. Water Management II field-1 times 3. System Development field-3 times 4. Irrigatin Information Management field-2 times 5. Training field-2 times	- New technology introducing to ID Engineer. Total 14 times and 800 participants	- To introduce advanced water management techniques.	90%

Achievement of the Project Activities

Output - Water Management Technology is disseminated to technical staff of Irrigation Department and farmers in test farm through training.

June 2003

Main activities mentioned in the Project						Progress of the Project		Final target level (B)	A/B
Activities	Period					In-charge(s)	Activities			Result/Output (A)
	99	00	01	02	03				
5.2 Formation of Training Master Plan							Training Master Plan was prepared & submitted to DG. DG approval is still waiting.	To formulate the training master plan.	95%
5.2.1 Working schedule					Daw Htar Htar Win	Working schedule was prepared by mean of the plan of operation.	# Plan of operation(June,1999) Working schedule will be prepared.	100%
5.2.2 Study on present conduction						Daw Htar Htar Win	First, collected the data. After that, studied those data & present training implementation. Then, prepared the report.	# Report on Training Master Plan for ID. (March,2000) Report will be prepared.	100%
5.2.2.1 Existing Master Plan						Collected and studied the following data to prepare the report. ~ Requirements in Proficiency of Departmental works for newly appointed Professional staff (ID/1977), ~Training Plan (ITC/95)	Based upon the collected data & study, counterpart prepared the report on Training Master Plan for ID. (March,2000) Report will be prepared.	100%
5.2.2.2 Present Training Implementation						Collected and studied the following data to prepare the report. ~Recommendation of JICA Short-term Expert Mr.Nakazawa, ~Conducted training program at ID (Mech-&ITC)	Report will be prepared.	100%
5.2.3 Preparation of proposal for establishment procedure of training master plan						Daw Htar Htar Win	Prepared & proposed the Proper Establishment Procedure. SSC authorized it.	#Proposed proper establishment procedure #Report on Function of SSC Proper establishment procedure will be prepared.	100%
5.2.3.1 Preparation of proposal						ITC proposed to DG to form the Sub-Special Committee (SSC). Prepared Proper Establishment Procedure together with Report on Function of SSC.	~DG formed SSC on 5.1.2000. ~Proposed proper establishment procedure (May,2000) ~ Report on Function of SSC (May, 2000) Proper establishment procedure will be prepared.	100%
5.2.3.2 Authorization of the procedure						Proper establishment procedure was approved through 3rd SSC meeting.	Approved proper establishment procedure for new Master Plan Proper establishment procedure will be authorized.	100%

7

Achievement of the Project Activities

Output - Water Management Technology is disseminated to technical staff of Irrigation Department and farmers in test farm through training.

June 2003

Main activities mentioned in the Project						Progress of the Project		Final target level (B)	A/B	
Activities	Period					In-charge(s)	Activities			Result/Output (A)
	99	00	01	02	03					
5.2.4 Preparation of draft master plan						Daw Htar Htar Win	Prepared the draft Training Master Plan step by step and submitted it to DG to authorize.	#First draft training master plan (Prepared by ITC) #Draft Training Master Plan (Prepared by SSC) #Training Master Plan (Prepared by SC)	Training Master Plan will be prepared for Irrigation Department.	75%
5.2.4.1 Preparation of first draft	.....						Collected necessary data from other branches in ID, through 1 st & 2 nd SSC meetings. After that, training section prepared the first draft training master plan. Then, ITC examined and submitted it to SSC through 3 rd SSC meeting.	First draft training master plan (September, 2000)	First draft training master plan will be prepared.	100%
5.2.4.2 Examination of the draft		.....					SSC examined & prepared draft training master plan again & again up to six times. According to the correction & suggestion of SSC, Draft Training Master Plan was prepared.	Draft Training Master Plan (Prepared by SSC/ June, 2001)	SSC will examine Draft Training Master Plan.	100%
5.2.4.3 Authorization of the draft master plan			.....				ITC proposed to DG to form the Special Committee (SC) to examine the draft training master plan and to prepare the training master plan. Therefore, DG formed SC in April, 2001. Up to January 2003, SC examined and prepared the Training Master Plan through five meetings. After that, SC submitted Training Master Plan to DG (ID) to approve & authorize. DG's approval is still waiting.	Training Master Plan (Prepared by SC/ February, 2003) SC submitted Training Master Plan to DG(ID) / May, 2003. DG formed SC on 6.4.2000.	To approve and authorize the Training Master Plan for Irrigation Department.	90%
5.2.4.4 Coordination of mater plan implementation					.....		For this task, necessary data & documents of one local training is still collecting to improve Training Master Plan.		Training Master Plan will be improved in same portions. (2 Local Trs & 2 WMTrs)	10%
Prospect of Sustainability										
5.1 Implementation of Training for Water Management	Collected and improved training facilities & teaching materials (including CD record data) can be used in future water management training. Based upon the experience of implementation of this Project, Concerned C/Ps can give lecture to ID staff & farmers to get more efficiency in the using of irrigation water.									
5.2 Formation of Training Master Plan	After authorized the Training Master Plan, ID will conduct the training according to the Training Master Plan to develop the human resources of ID and to upgrade the technical knowhow of ID staff.									

..... Plan

———— Implemented

Long-term Japanese Experts

No.	Name of Expert	Field	Period of Assignment																		
			From	To	Remarks	1999	2000	2001	2002	2003	2004										
1	Mr. Jiruemon TATSUTA	Chief Advisor/ Information Management	01.04.99	31.05.99		—															
	Mr. Susumu SUGATANI		24.05.99	31.03.02		—															
	Mr. Hiroshi ISHIDA		30.05.02	up date						—											
2	Mr. Yoshinobu SUGIYAMA	Coordinator/ Training	01.04.99	18.06.00		—															
	Mr. Akio OTAKA		01.06.00	31.08.02			—														
	Mr. Ryosuke ITO		05.08.02	up date						—											
3	Mrs. Michiyo INAKI	Water Management for Main Facilities	24.05.99	23.05.01		—															
	Mr. Toyoshi KURAMAE		08.05.01	07.06.02			—														
	Mr. Yoshihiro DOI		30.05.02	up date						—											
4	Mr. Tsutomu SAKAUE	Water Management for Terminal Facilities	01.04.99	31.03.02		—															
	Mr. Hiroyoshi YOSHIOKA		26.03.02	up date						—											
5	Mr. Norihiko IKAWA	System Development	11.04.99	10.04.01		—															
	Mr. Nobuki MARUMO		27.05.01	up date						—											

2

Short-term Japanese Experts

No.	Name of Expert	Field	Period of Assignment																	
			From	To	Remarks	1999	2000	2001	2002	2003	2004									
1	Mr. KAMIMURA Kenichiro	System Development	19.12.99	08.01.00																
2	Dr. HASEGAWA Takashi	Water Management for Main Facilities	16.01.00	26.01.00																
3	Dr. KAZUHIKO Yagi	Training Plan	22.02.00	17.03.00																
4	Dr. MASAYOSHI Sato	Water Management for Terminal Facilities	19.03.00	30.03.00																
5	Dr. Tatsuo NAKA	Water Management for Main Facilities	20.11.00	2.12.00																
6	Mr. Narita RYOICHI	System Development	02.12.00	16.12.00																
7	Mr. Yasuhiro OCHII	Irrigation Information Management	02.12.00	23.12.00																
8	Mr. Masato FUKUMOTO	Water Management for Terminal Facilities	07.01.01	04.02.01																
9	Dr. Hisatomo KANAYA	Training	01.09.01	23.9.01																
10	Mr. Yoshikatsu MIURA	System Development	09.09.01	29.09.01																
11	Mr. Kyoji TAKAKI	Water Management for Main Facilities	23.09.01	13.10.01																
12	Mr. Masato FUKUMOTO	Water Management for Terminal Facilities	25.11.01	23.12.01																
13	Mr. Takashi KATO	Irrigation Information Management	20.01.02	09.02.02																
14	Dr. Nobumasa HATCHO	Water Management for Main Facilities	03.03.02	16.03.02																
15	Dr. Nobumasa HATCHO	Water Management for Main Facilities	04.08.02	24.08.02																
16	Mr. Shunsuke TOMIMURA	System Development	01.10.02	31.10.02																
17	Mr. Shinsaku FUJIMORI	Water Management for Terminal Facilities	21.10.02	02.11.02																
18	Dr. Tatsuo NAKA	Water Management for Main Facilities	03.11.02	16.11.02																
19	Mr. Kazuhiko KAMACHI	Training	24.11.02	21.12.02																

12

Assignment of Counterpart/ Training in Japan

Note : In case a counterpart's employment is temporary, enter "*" in Remarks

No.	Name of Counterpart	Field	Present Post Post at assignment time	Remark	Period of Assignment								Training in Japan			
					From	To	1999	2000	2001	2002	2003	2004	Year	Name of Training Cours	Duration	
1	U Kyaw San Win	Project Director	Director General	Promoted												
			Deputy Director General		01.04.99	28.07.00										
2	U Khin Zaw	Project Director	Deputy Director General	Appointed	09.11.00	03.05.01							2000	Irrigation Projects for Paddy Field	05.05.01 ~ 03.06.01	
					04.05.01	up to date						2001				
3	U Ohn Gaing	Deputy Project Director	Director		18.02.98	up to date							2000	Water Management	22.05.00 ~ 13.06.00	
4	U Aye Thein	Project Manager	Deputy Director		22.6.99	up to date							2000	Irrigation Drainage	19.8.00 ~ 12.9.00	
5	Daw Htay Htay Win	Deputy Project Manager	Assistant Director		07.04.97	up to date							2002	Water Management	29.06.02 ~ 01.08.02	
6	U Kyaw Lwin	Deputy Project Manager	Assistant Director		18.07.99	up to date							-	-	-	
7	U Aung Bo	Water Management I	Staff Officer		25.08.93	up to date							2002	Application of water distribution by simulation	07.09.02 ~ 02.11.02	
8	Daw Than Than Oo	Water Management I	Staff Officer		01.05.93	up to date							2002	Study of Canal Canal Capacity	27.02.02 ~ 27.04.02	
9	U Aung Thu Kywe	Water Management I	Staff Officer		26.03.98	up to date							2000	Water Management	30.03.00 ~ 17.11.00	
10	U Aung Win Swe	Water Management I	Staff Officer		31.03.98	up to date							1999	(Monbu-kagakusho) Utsunomiya University	05.04.99 ~ 27.03.02	
11	U Htay Aung Tint	Water Management I	Staff Officer		06.08.02	up to date							2003	Operation & Management of Irrigation Canal System	21.06.03 ~ 13.12.03	
12	U Zaw Wan	Water Management I	Staff Officer	Transferred to Con-3	19.10.01	03.05.02							-	-	-	
13	U Aye Min	Water Management I	Sub-Assistant Engineer		02.04.99	Up to date							2003	Study on Technique of Construction Control	21.06.03 ~ 19.07.03	
14	Daw Myint Myint Than	Water Management II	Staff Officer		01.10.99	up to date							2001	Irrigation & Drainage	05.02.01 ~ 16.11.01	
15	U Aung Myo Swe	Water Management II	Staff Officer		02.05.00	up to date							2002	Agricultural Land and Water Resources Deve: and Soil Cement	28.05.02 ~ 31.08.02	
16	U San Win Naing	Water Management II	Staff Officer		31.03.98	up to date							2002	Irrigation Drainage & Rural Development	11.02.02 ~ 22.11.02	
17	U Myo Zaw Zaw	Water Management II	Staff Officer		08.10.99	up to date							2002	Irrigation Drainage & Rural Development	11.02.03 ~ 21.11.03	
18	Daw May Zin Htay	Water	Deputy Supervisor(MAS)										2003	Agricultural Extension	06.05.03 ~	

Assignment of Counterpart/ Training in Japan

Note : In case a counterpart's employment is temporary, enter "*" in Remarks

No.	Name of Counterpart	Field	Present Post Post at assignment time	Remark	Period of Assignment								Training in Japan		
					From	To	1999	2000	2001	2002	2003	2004	Year	Name of Training Cours	Duration
		Management II												Planning and Management	02.08.03
19	U Myo Aung	System Development	Staff Officer		08.08.94	up to date							2000	Remote Sensing	09.05.00 ~ 08.08.00
20	U Kyaw Lin Oo	System Development	Staff Officer	Transferred to Design Branch	08.08.94	22.09.99									
			Staff Officer	Transferred from Design Branch	25.10.00	up to date							2002	Remote Sensing	07.05.02 ~ 15.07.02
21	U Tbaung Htike	System Development	Staff Officer	Transferred to Con-2	30.07.97	23.08.02							2000	Irrigation & Drainage	07.02.00 ~ 17.11.00
22	U Zaw Wan *	System Development	Staff Officer	Transferred to Con-3	16.09.02	10.02.03									
23	Daw Than Win *	System Development	Staff Officer	Transferred to Design Branch	01.10.99	22.09.00							2000	Information Processing Computer Net work	31.03.00 ~ 06.06.00
24	U Soe Tun Aung	IIM	Staff Officer		23.09.99	up to date							2001	Operation & Management of Irrigation Canal System	25.06.01 ~ 16.11.01
25	U Zaw Zaw Latt	IIM	Staff Officer		08.10.99	up to date									
26	U Ne Win	IIM	Staff Officer	Monbu-kagakusho	31.03.98	up to date							2000	Mie University	05.04.00 ~ 27.03.03
27	Daw Htar Htar Win	Training	Staff Officer		15.08.95	up to date							2002	Irrigation Water Resources in Arid and EIA for Sustainable Deve:	07.07.02 ~ 07.12.02
28	Daw Aye Aye Hlaing	Training	Staff Officer	Transferred to Design Branch	06.07.92	22.9.99									
			Staff Officer	On-duty from Design Branch	15.10.99	05.09.01									
			Staff Officer	Transferred from Design Branch	06.09.01	Up to date							2001	Irrigation Water Management	09.07.01 ~ 04.08.01
29	U Aung Naing	Training	Staff Officer		08.10.99	Up to date									
30	U Zaw Win		Director Hydrology Branch										2003	Participation in 3rd World Water Forum	17.03.03 ~ 24.03.03
31	U Mg Mg Naing	Water	Staff Officer	Monbusho	22.09.95	Up to date							1998	Tsukuba University	April 98 ~

Assignment of Counterpart/ Training in Japan

Note : In case a counterpart's employment is temporary, enter "*" in Remarks

No.	Name of Counterpart	Field	Present Post Post at assignment time	Remark	Period of Assignment								Training in Japan			
					From	To	1999	2000	2001	2002	2003	2004	Year	Name of Training Cours	Duration	
		Management II		Scholarship												Continue
32	Daw Mu Mu Than	Water Management I	Staff Officer		18.08.95								1998	Kyoto University Mie University	April - 98 ~ Continue	
33	U Aung Than Oo	Water Management II	Staff Officer		06.08.99								1999	Mie University	April 00 ~ Continue	
34	U Kyaw Min Naing	System Development	Staff Officer		08.10.99								2002	Kochi University	April 02 ~ March 04	
35	U Ye Myint	Water Management I	Staff Officer		01.12.00								2001	Tottori University	April 01 ~ March 03	

4/10

List of Equipment Provided by the Government of Japan

≥¥100,000

As of June 2003

YF	Number	Name of Equipment	UNIT PRICE (US\$)	Total	Quantity	Frequency of Use	Condition	Remarks	Location	Timing
1998	PE-001	Generator, Super Silent 40KVA, SDMO	15,125	15,125	1	A	A		Hlegu Sub-Office	15-Mar-99
1998	PE-002	Risograph, Riso GR 3750	15,000	15,000	1	A	A		Risograph Room, Bago ITC	15-Mar-99
1998	PE-003	Consumables for Risograph, Riso N/A	2,100	2,100	1	A	A		Risograph Room, Bago ITC	15-Mar-99
1998	PE-004	Copier, Canon NP-4050	9,725	9,725	1	A	A		Yangon Coordinator Room	15-Mar-99
1998	PE-005	Facsimile, Canon L-300	1,925	1,925	1	A	A		Yangon Coordinator Room	15-Mar-99
1998	PE-006	Consumables for Copier, Canon NP-4050	970	970	1	A	A		Yangon Coordinator Room	15-Mar-99
1998	PE-007	Personal Computer Set, Geocomp Pentium II 333MHz	2,770	5,540	2	A	A		WM I Section, Hlegu Office	15-Mar-99
1998	PE-008	Personal Computer Set, Geocomp Pentium II 333MHz	2,770	5,540	2	A	A		WM II Section, Hlegu Office	15-Mar-99
1998	PE-009	Personal Computer Set, Geocomp Pentium II 333MHz	2,770	2,770	1	A	A		SD Section, Bago ITC	15-Mar-99
1998	PE-010	Personal Computer Set, Geocomp Pentium II 333MHz	2,770	2,770	1	A	A		OCE Room, Bago ITC	15-Mar-99
1998	PE-024	Map Data Storing System, OCE 9400	38,500	38,500	1	C	A	Use necessary time	OCE Room, Bago ITC	15-Mar-99
1998	PE-027	Color Printer, Epson Stylus Color 1520	1,000	1,000	1	A	A		OCE Room, Bago ITC	15-Mar-99
1998	PE-028	GPS, Topcon GP-DX1	49,044	49,044	1	D	A	Use necessary time	SD Section, Bago ITC	15-Mar-99
1998	PE-029	Personal Computer Set, N/A Pentium II 333MHz	2,321	2,321	1	A	A		SD Section, Bago ITC	15-Mar-99
1998	PE-031	Air Conditioner, Sharp AH-A184E/AU-184E	950	2,850	3	A	A		Hlegu Sub-Office	15-Mar-99
1998	PE-045	Vehicle, 4 Wheel Drive, Toyota Land Cruiser FZJ105L-GCMRK (Gasoline 4,477cc)	28,837	28,837	1	A	A		TR Section, Yangon	15-Mar-99
1998	PE-046	Vehicle, 4 Wheel Drive, Toyota Land Cruiser FZJ105L-GCMRK (Gasoline 4,477cc)	28,837	28,837	1	A	A		SD Section, Yangon	15-Mar-99
1998	PE-047	Vehicle, Micro-Bus, Toyota Coaster HZB50L-ZGMSS (Diesel 4,164cc)	44,878	44,878	1	A	A		Administration, Bago ITC	15-Mar-99
1999	PE-003	Personal Computer Set, Notebook type, Dell 5000R 500 LLT	3,850	3,850	1	A	A		SD Room, Bago ITC	23-Mar-00
1999	PE-004	Scanner, Color Micro Tek, 9600 XL	2,100	2,100	1	B	A		SD Room, Bago ITC	23-Mar-00
1999	PE-006	Personal Computer Set, N/A	1,930	1,930	1	A	A		Risograph Room, Bago ITC	21-Mar-00
1999	PE-011	Copier, Canon NP-4050	9,725	9,725	1	A	A		Hlegu Sub-Office	16-Mar-00
1999	PE-012	Copier, Canon NP-4050	7,000	7,000	1	A	A		Dy HD ITC Room, Bago ITC	16-Mar-00
1999	PE-038	Direct Projector, Plus DP-30	1,615	1,615	1	C	A	Use in Training time	TR Section, Bago ITC	23-Mar-00
1999	PE-039	LCD Projector, CTX EzPro550	3,803	3,803	1	C	A	Use in Training time	TR Section, Bago ITC	23-Mar-00
2000	PE-001	Copier, Canon NP-6241	7,700	7,700	1	A	A		IIM Room, Bago ITC	23-Apr-01
2001	PE-012	TNT mips (Remote Sensing/GIS. Map and Image Processing Software)D-60 TNT mipsRemote Sensing Software	8,000.00	8,000	1	A	A		SD Room, Bago ITC	18-Mar-02
2001	PE-013	P-15 Printer/Plotter Support Feature for TNT mips	2,000.00	2,000	1	A	A		SD Room, Bago ITC	18-Mar-02
2001	PE-014	Auto CAD Land Development Desktop	1,690.00	1,690	1	A	A		SD Room, Bago ITC	18-Mar-02

Frequency of Use: A: Daily B: Weekly, Monthly C: Use in Specific Period D: 3-11 times/year E: Idle
Condition : A: Good Condition B: Fair Condition C: Condition for Repair D: Unable to Use

List of Equipment Provided by the Government of Japan

≥ ¥100,000

As of June 2003

YF	Number	Name of Equipment	UNIT PRICE (¥)	Total	Quantity	Frequency of Use	Condition	Remarks	Location	Timing
1998	PE-048	Motorcycle, Honda CT110P/DK	280,000	1,680,000.00	6	A	A		WMI,II Hlegu Sub-Office	28-May-00
1999	PE-042	Water Level Meter, Ikeda LR-110WPS	434,000	6,510,000.00	15	C	A	Use in irrigation season	WMI,II Hlegu Sub-Office	28-May-00
1999	PE-045	Current Meter, Tokyo Keisoku SAT-200-10	140,000	700,000.00	5	C	A	Use in irrigation season	WMI Hlegu Sub-Office	28-May-00
1999	PE-046	Counter, Tokyo Keisoku SA-1111	200,000	1,000,000.00	5	C	A	Use in irrigation season	WMI Hlegu Sub-Office	28-May-00
1999	PE-048	Instrument Shelter, Tamaya H2-SF	253,800	253,800.00	1	A	A		WMI Hlegu Sub-Office	28-May-00
1999	PE-049	Recording Rain Gauge, Ota, 24-T	120,000	120,000.00	1	A	A		WMI Hlegu Sub-Office	28-May-00
1999	PE-052	Evaporation Pan, D-101	400,000	400,000.00	1	A	A		WMI Hlegu Sub-Office	28-May-00
1999	PE-053	Wind Vane and Anemo Meter, Ota 111-T	830,000	830,000.00	1	A	A		WMI Hlegu Sub-Office	28-May-00
1999	PE-056	Thermo Hygrometer, Sato Aurora 90 III	130,000	130,000.00	1	A	A		WMI Hlegu Sub-Office	28-May-00
1999	PE-060	Partial Flume, Ikeda PF-6	430,000	1,290,000.00	3	C	A	Use in irrigation season	WMI Hlegu Sub-Office	28-May-00
1999	PE-065	Vehicle, 4 Wheel Drive, SUZUKI Jimny SN413V-JLX	1,727,300	3,454,600.00	2	A	A		Hlegu Sub-Office	2-Oct-00
1999	PE-066	Spare Parts for Jimny, SUZUKI	345,400	345,400.00	1	A	A		Hlegu Sub-Office	2-Oct-00
2000	PE-002	Water Level Gauge, Yokogawa, W-431-01	385,000	385,000.00	1	A	A	Installed at Resever	Hlegu Sub-Office	23-Apr-01
2000	PE-007	Water Level Recorder, Yokogawa, W-021-01-60	449,000	1,796,000.00	4	C	A	Use in irrigation season	Hlegu Sub-Office	23-Apr-01
2000	PE-010	Recording Rain Gauge, Yokogawa, B-432-10	394,000	788,000.00	2	A	A		SD Room, Bago ITC	23-Apr-01
2000	PE-019	Wireless Amp with Transformer, Victor, PF-W91	105,000	105,000.00	1	C	A	Use in Trainig time	TR Section, Bago ITC	23-Apr-01
2000	PE-029	Software (AUTO CAD 2000), Autodesk	449,800	449,800.00	1	A	A		SD Room, Bago ITC	23-Apr-01
2000	PE-033	Software (ADOBE PHOTOSHOP 6.0), Adobe	119,000	119,000.00	1	A	A		SD Room, Bago ITC	23-Apr-01
2000	PE-042	Slide Projector with Transformer, Cabin, CF-110	110,000	110,000.00	1	C	A	Use in Trainig time	TR Section, Bago ITC	23-Apr-01
2000	PE-046	Land Cruiser, Toyota, HZJ105L-GCMRS	2,540,000	5,080,000.00	2	A	A		WMI Section, IIM Section	17-Jun-01
2000	PE-048	Hi-Lux Double Cab, Pick Up, Toyota, PRMDS	1,790,000	1,790,000.00	1	A	A		TR Section, Yangon	17-Jun-01
2000	PE-050	Honda Bike Spare Parts, Honda	227,000	227,000.00	1	A	A		Hlegu Sub-Office	17-Jun-01
2001	PE-001	Land Cruiser, Toyota, HZJ105L-GCMRS	2,540,000	2,540,000.00	1	A	A		WMI Section, Yangon	23-Sep-01
2001	PE-003	Hi-Lux Double Cab, Pick Up, Toyota, PRMDS	1,790,000	1,790,000.00	1	A	A		ITC, Bago ITC	23-Sep-01
2001	PE-005	HIACE, Toyota, BFNRS	1,740,000	1,740,000.00	1	A	A		ITC, Bago ITC	23-Sep-01
2001	PE-007	Digital video Camera, GR-DVM75	137,300	137,300.00	1	B	A		TR Section, Bago ITC	1-Mar-02
2001	PE-010	Digital Video Cassete Player, SR-VS20U	160,300	160,300.00	1	A	A		TR Section, Bago ITC	1-Mar-02
2001	PE-017	Paddy Field Recorded Depth Tester N-Type, DIK-4300	152,000	760,000.00	5	C	A	Use in irrigation season	WMI II Hlegu Sub-Office	22-Apr-02
2001	PE-018	GPS System, Legacy-E(GD), Topcon	7,920,000	7,920,000.00	1	D	A	Use necessary time	SD Room, Bago ITC	25-Apr-02

Frequency of Use: A: Daily B: Weekly, Monthly C: Use in Specific Period D: 3-11 times/year E: Idle
Condition : A: Good Condition B: Fair Condition C: Condition for Repair D: Unable to Use

1

Local Cost implementation/Japan

Unit: US\$

No.	Category	Budgetary Year					Amount
		FY.1999	FY.2000	FY.2001	FY.2002	FY.2003 (PlANN)	
1	General Cost	48,219	60,909	41,835	66,480	60,665	278,108
2	LLDC Special Cost	27,022	10,350				37,372
3	Technical Extension Cost	12,530					12,530
4	Project Security Cost		2,990				2,990
5	Field Applicable Cost		57,009	95,484			152,493
6	Technical Exchange Program		16,532				16,532
7							
8							
Total		87,771	147,790	137,319	66,480	60,665	500,025

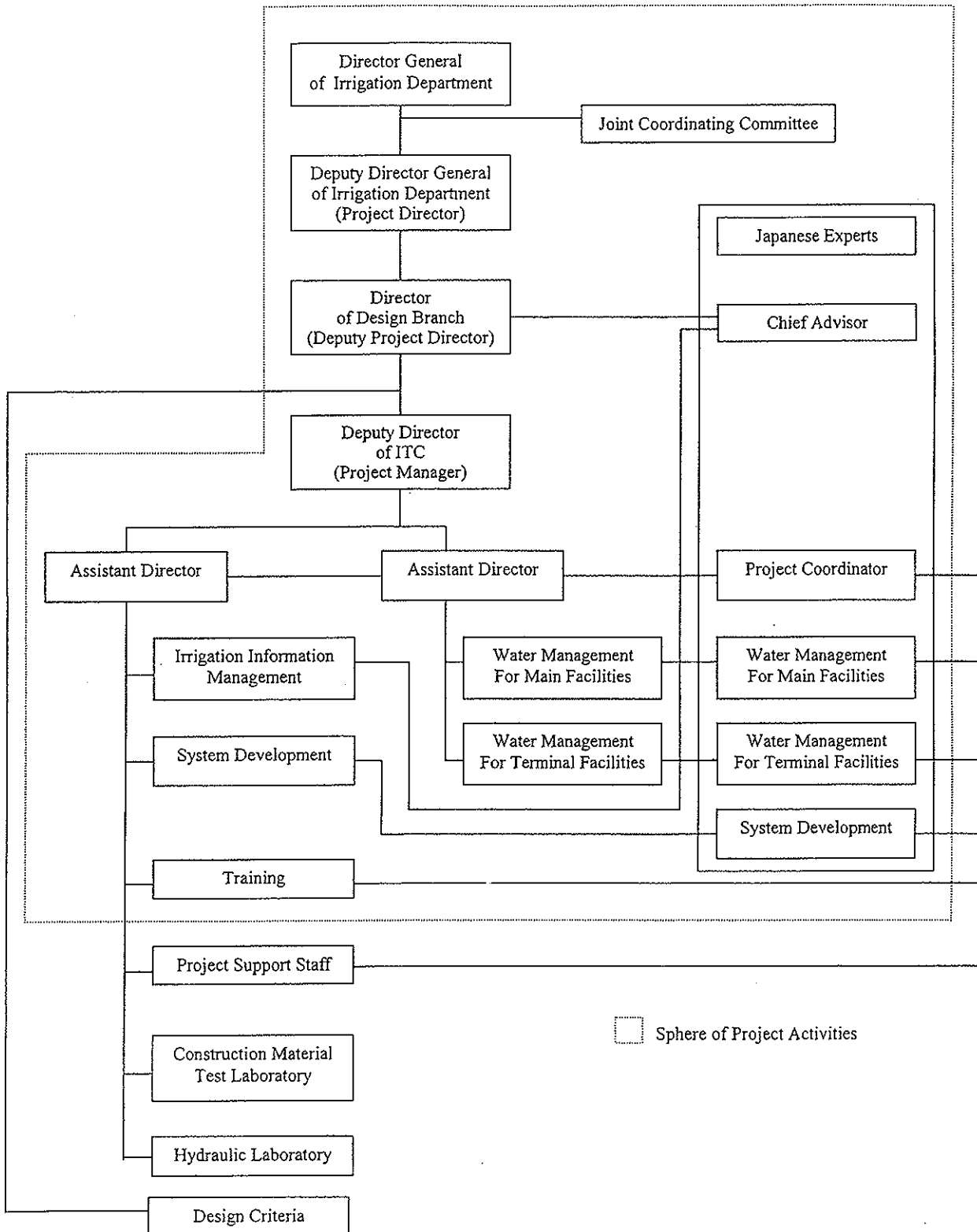
12

Allocation of Budget and Expenditure/ Myanmar

Unit : Kyats

No.	Description		FY.1999	FY.2000	FY.2001	FY.2002	FY.2003	Total
Current Budget								
1	Salary of ITC Staff Personal	Received Budget	1750360.00	1917700.00	8800000.00	9496500.00	9899900.00	31864460.00
		Expenditure	1746953.03	1918372.40	8801972.95	9496596.15	9894711.62	31858606.15
2	Internal Travel Allowance	Received Budget	600000.00	850000.00	850000.00	1125500.00	1038800.00	4464300.00
		Expenditure	599945.00	849547.00	850003.00	1125512.44	1038432.50	4463439.94
3	Labour and Transporting Charges	Received Budget	136600.00	146500.00	172200.00	281400.00	356900.00	1093600.00
		Expenditure	136459.20	146468.40	172135.40	281378.40	356947.60	1093389.00
4	Taxes (Custom Fee for Imported Equipment)	Received Budget	-	15000.00	30700.00	50900.00	163000.00	259600.00
		Expenditure	-	13810.00	30690.00	50800.00	162975.00	258275.00
5	Office accessories, Publication, Newspapers, Uniform & Conference	Received Budget	816600.00	1305500.00	965500.00	2747600.00	2352700.00	8187900.00
		Expenditure	815553.00	1296373.00	965596.00	2747986.00	2352725.00	8178233.00
6	Electricity Power Charges	Received Budget	415000.00	347870.00	300000.00	317000.00	271500.00	1651370.00
		Expenditure	414700.00	347858.00	299947.00	317036.00	271514.00	1651055.00
7	Telephone Charges	Received Budget	52000.00	284940.00	200000.00	373700.00	348100.00	1258740.00
		Expenditure	50951.80	284933.40	200000.00	373501.20	348730.60	1258117.00
8	Maintenance Charges of Machines & Equipment (Technical Equipment for Staff)	Received Budget	152000.00	250000.00	258800.00	393100.00	357700.00	1411600.00
		Expenditure	151905.00	249925.00	258825.00	393265.00	357720.00	1411640.00
9	Maintenance Charges of Building (Building construction)	Received Budget	13628900.00	1151500.00	1380000.00	1882100.00	2528000.00	20570500.00
		Expenditure	13628951.80	1147957.00	1382399.36	1882031.29	2565426.00	20606765.45
10	Maintenance Charges of Vehicles	Received Budget	466800.00	674000.00	359700.00	812200.00	829400.00	3142100.00
		Expenditure	466237.00	650025.00	359745.00	812230.00	829440.00	3117677.00
11	Charges of Diesel, Motor Spirit, Engine Oil & Lubricant	Received Budget	2812000.00	3960000.00	4016000.00	4148300.00	4418800.00	19355100.00
		Expenditure	2459806.00	3822676.00	4016012.00	4148378.00	4427240.00	18874112.00
12	Others	Received Budget	2755200.00	2326000.00	2508700.00	2942400.00	3273500.00	13805800.00
		Expenditure	2739999.13	2316080.00	2508707.00	2942385.00	3273534.00	13780705.13
13	Expenditure for Training	Received Budget	1640000.00	2500000.00	2675200.00	2707500.00	3600000.00	13122700.00
		Expenditure	1628428.00	2496190.00	2675228.00	2707395.00	3895170.00	13402411.00
Capital Budget								
1	Technical Co-operation Program for ITC Project Phase II	Received Budget	3000000.00	8000000.00	3150000.00	17120000.00	22215000.00	81835000.00
		Expenditure	2999969.11	7987671.00	31336400.06	17119776.28	21328257.35	80772073.80
Total Budgetary Plan								
Total Received Budget			28225460.00	23729010.00	54016800.00	44398200.00	51653300.00	202022770.00
Total Expenditure			27839858.07	23527886.20	53857660.77	44398270.76	51102823.67	200726499.47
Balance of Fiscal Year			385601.93	201123.80	159139.23	-70.76	550476.33	1296270.53

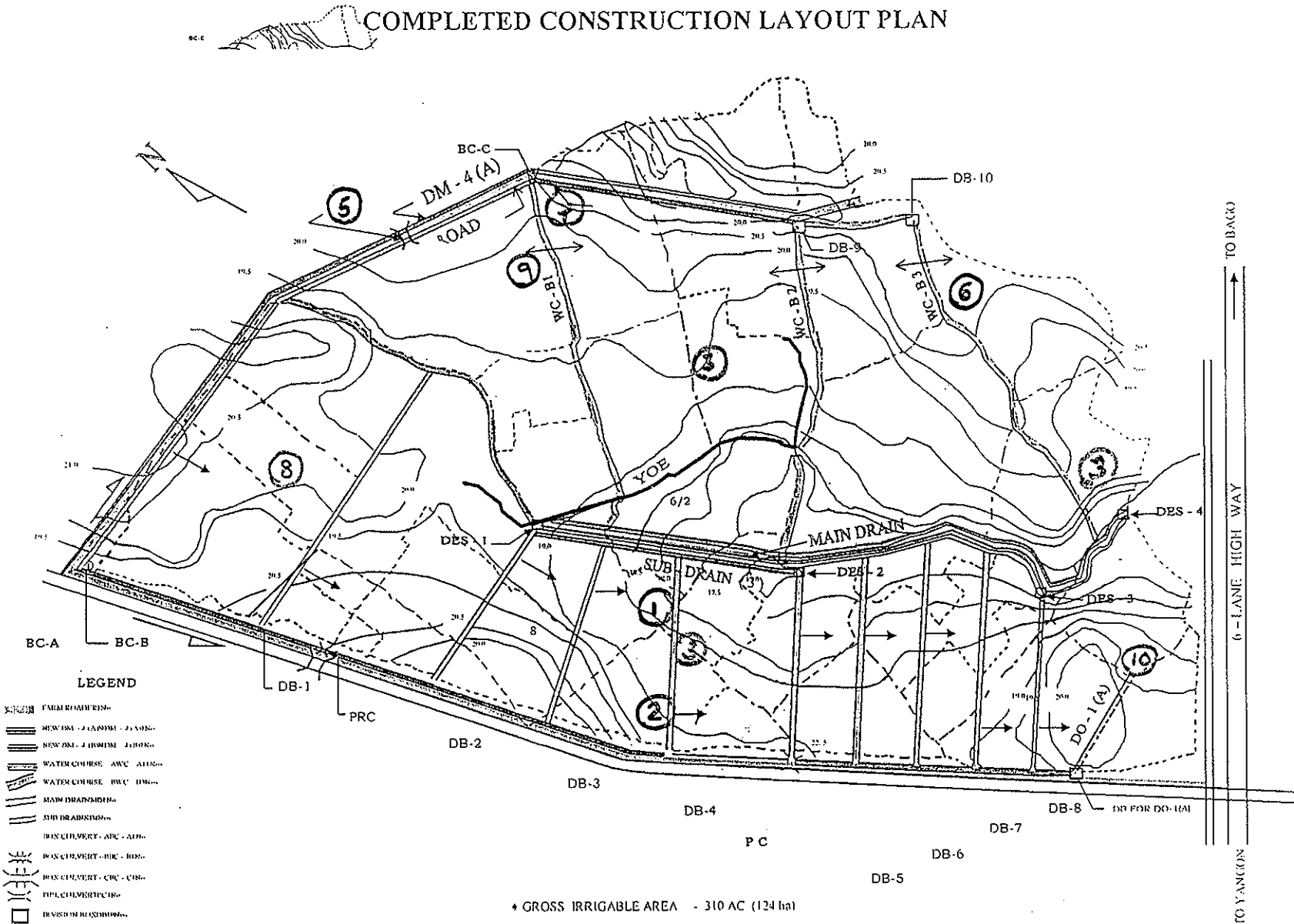
ITC PROJECT PHASE II ORGANIZATION CHART



A

B

WATER MANAGEMENT FOR TERMINAL FACILITIES
 CONSTRUCTION OF EXTENSIVE TYPE TEST FARM (124 ha.)
 COMPLETED CONSTRUCTION LAYOUT PLAN



- | No. | Farmers' Name | Location of field |
|-----|--|--|
| 1 | Can you get irrigation water easily at present in comparison to the condition before construction ? | |
| | <input type="radio"/> more easily | <input type="radio"/> same <input type="radio"/> worse |
| 2 | Can you get enough irrigation water at present in comparison to the condition before construction ? | |
| | <input type="radio"/> enough | <input type="radio"/> same <input type="radio"/> worse |
| 3 | Do you think that irrigation water is distributed with fair at present in comparison to the condition before construction ? | |
| | <input type="radio"/> fair | <input type="radio"/> no |
| 4 | Can you cultivate paddy field according to your schedule at present in comparison to the condition before construction ? | |
| | <input type="radio"/> yes | <input type="radio"/> same <input type="radio"/> worse |
| 5 | Do you think that the quarrels about irrigation water among the village were reduced at present in comparison to the condition before construction ? | |
| | <input type="radio"/> yes | <input type="radio"/> no |
| 6 | Did the number of times in a week to go to the fields to manage irrigation water increase in comparison to the condition before construction ? | |
| | <input type="radio"/> yes | <input type="radio"/> same <input type="radio"/> no |
| 7 | Have you kept ponding depth in the field according to MAS's instruction after farmers' training had been implemented by ITC? | |
| | a. Earlier than farmers' training by ITC | |
| | b. After farmers' training by ITC | |
| | c. Not keep | |

Farmers' Questionnaire in Extensive Type Test Farm on 2.Sep.2003

(2/2)

No	Farmers' name	Location of field	Q 1 (easily)			Q 2 (enough)			Q 3 (fair)		Q 4 (schedule)		Q 5 (quarrels)			Q 6 (number of management)			Q 7 (keepnig ponding depth)			
			more easily	same	worse	enough	same	worse	fair	no	yes	same	worse	yes	no	yes	same	no	before training	after training	not keep	
1	U Aung Win	A4,5 D/S	1			1			1		1			1			1				1	
2	U Tun Kyi	A5 U/S	1			1			1		1			1			1				1	
3	U Aye Lwin	A5,B2,B3 D/S	1			1			1		1			1			1			1		
4	U Myint Aung	A5 U/S	1			1			1		1			1				1			1	
5	U Maung Thin	A1 D/S	1			1			1		1			1			1				1	
6	U Soe Myint	B3 U/S	1			1			1		1			1				1			1	
7	U Thaug Nyunt	B1 U/S	1			1			1		1			1				1			1	
8	Daw Aye Aye	A1,A2 M/S	1			1			1		1			1			1				1	
9	U Maung Mying	B1 U/S	1			1			1		1			1					1		1	
10	U Zaw Thein	DOIF D/S	1			1			1		1			1					1		1	
Total			10	0	0	10	0	0	10	0	10	0	0	10	0	5	3	2	2	8	0	
Average																						

