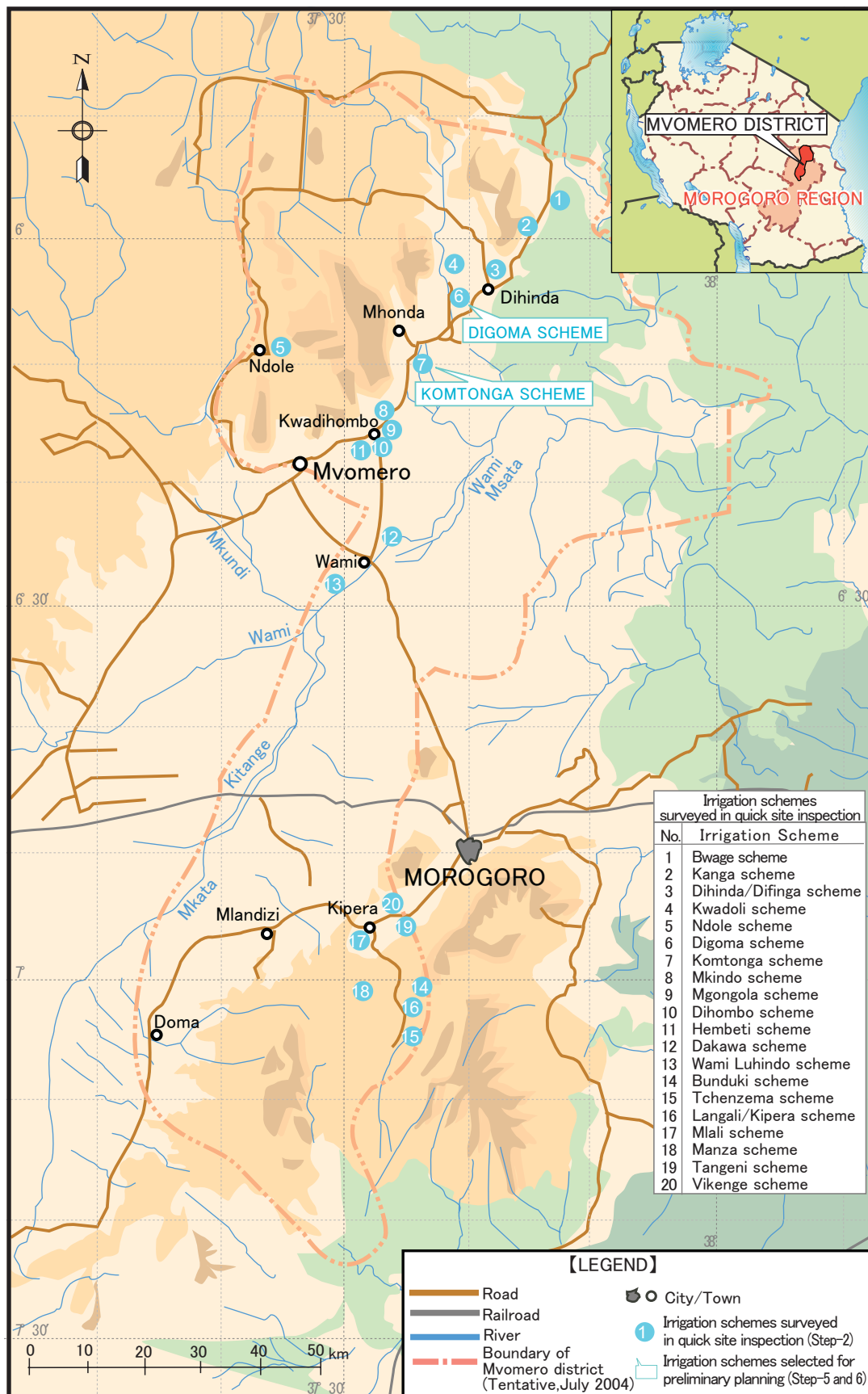
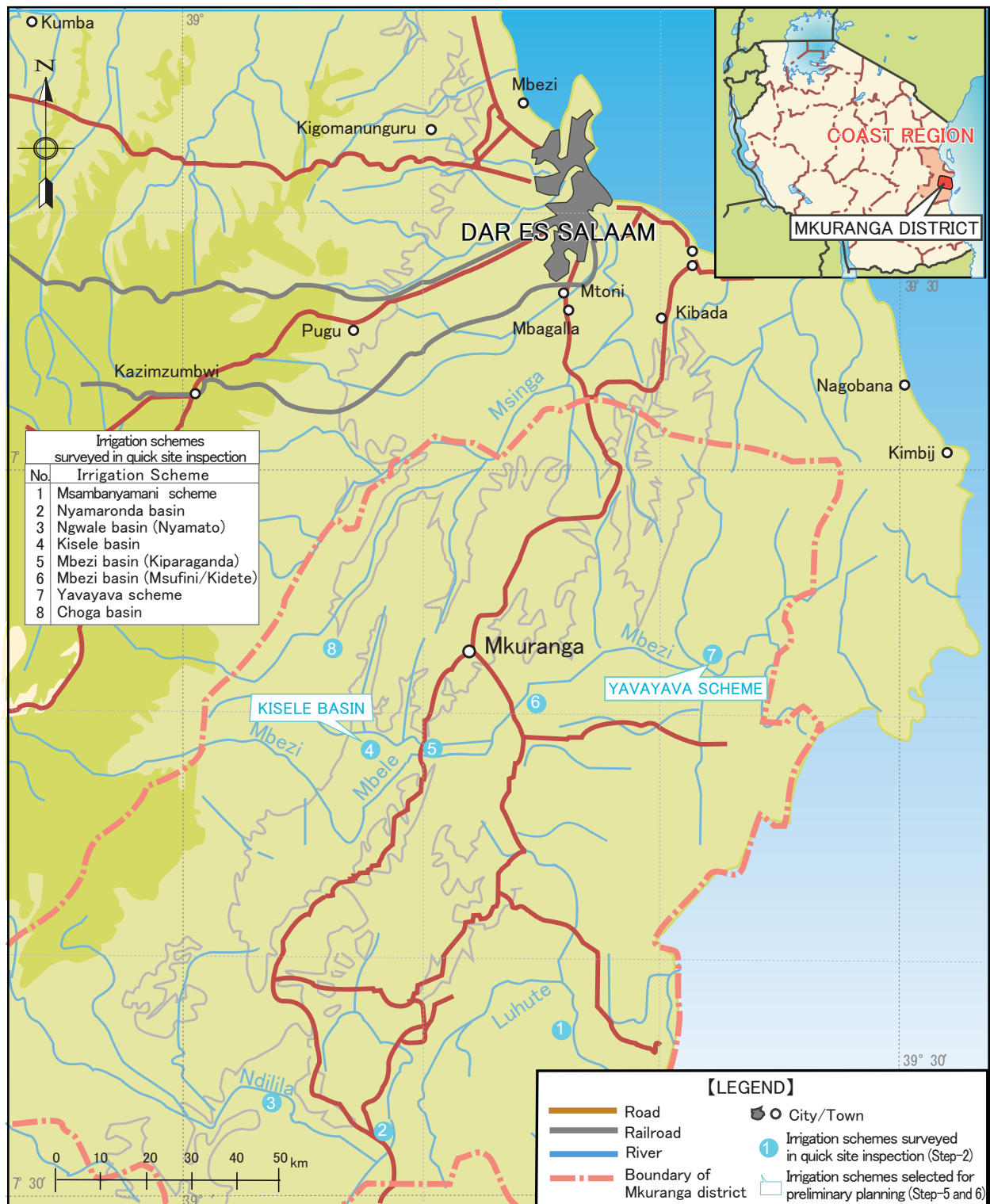


Appendix B
Record of Training on
Irrigation Scheme Formulation for DADP
(VS-2)





**THE STUDY
ON
THE NATIONAL IRRIGATION MASTER PLAN
IN
THE UNITED REPUBLIC OF TANZANIA**

VERIFICATION STUDY REPORT

APPENDIX B

**RECORD OF TRAINING ON
IRRIGATION SCHEME FORMULATION
FOR DADP (VS-2)**

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Chapter 1

Introduction

CHAPTER 1 INTRODUCTION

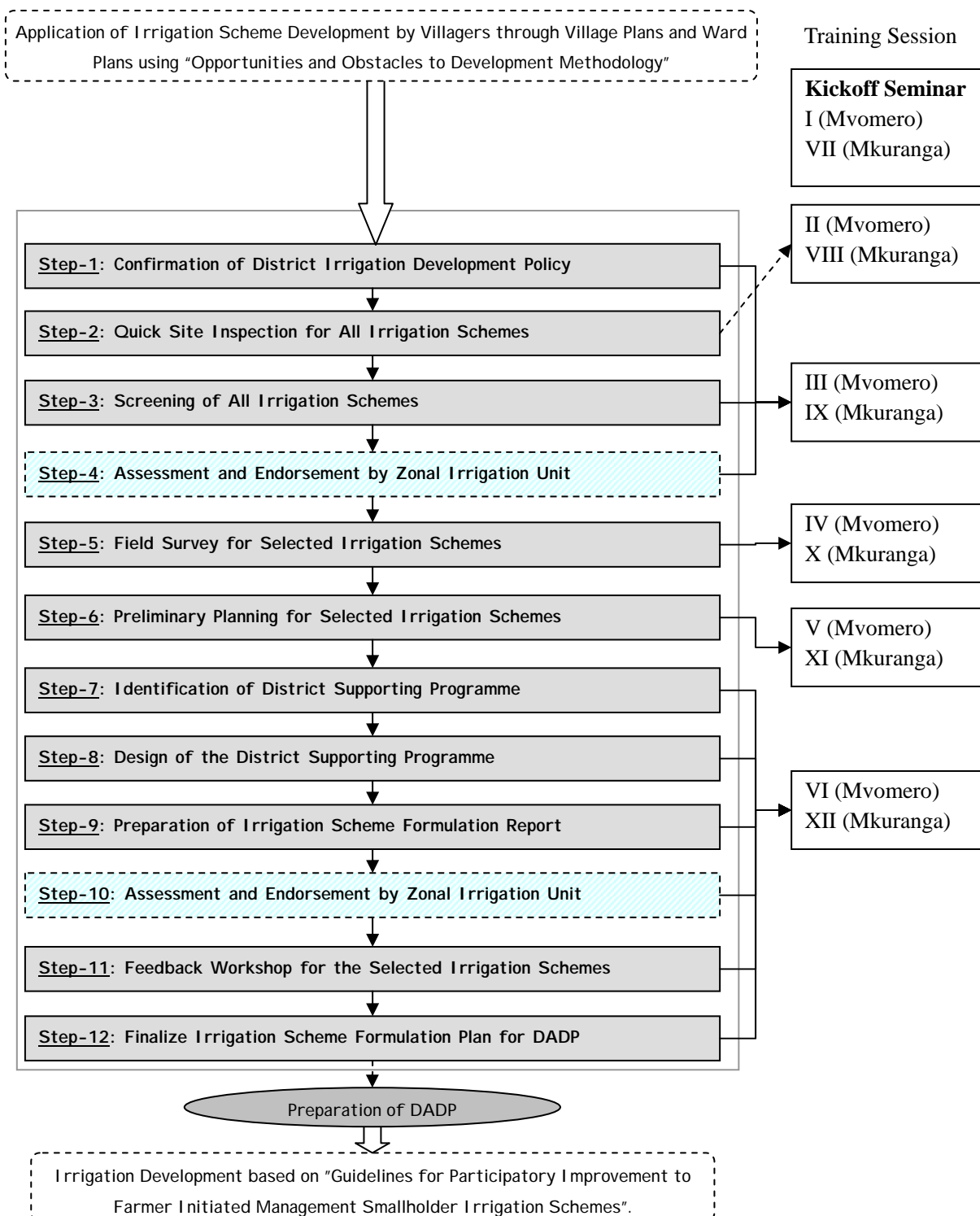
This “Appendix B: RECORD OF THE TRAINING ON IRRIGATION SCHME FORMULATION” presents the record of the training carried out for the “Support for Irrigation Scheme Formulation for DADP (Verification Study - 2)”.

Chapter 2 presents the training conducted in Mvomero District, which was one of the model districts of the Verification Study. The training was conducted in accordance with the irrigation scheme formulation steps given by the “Guidelines for Irrigation Scheme Formulation for DADP” (see figure in the next page for the steps). Those steps were grouped as the six Training Sessions to conduct the training efficiently. The chapter was described by the session. Description of each session is composed of (i) outline of the session, (ii) attendance list, (iii) record of discussion, (iv) findings, (v) photos, (vi) summary of result of the questionnaire, and (vii) others.

Chapter 3 provides record of training conducted in Mkuranga District, which was another model district of the Verification Study. It was presented in the same description style with that for Chapter 2.

Chapter 4 describes evaluation of the training effects. Impacts of the training sessions were evaluated in the middle and at the last of the training. The chapter also presents result of those evaluations.

Flow of the Irrigation Scheme Formulation Introduced in the Guidelines
(Summary of the Section 3 of the Guidelines)



Chapter 2

Record of Training on Irrigation Scheme Formulation for DADP in Mvomero District

Session I

Kickoff Seminar in Mvomero District

Activities Carried Out:

Before starting the irrigation scheme formulation, the Kickoff Seminar for Mvomero District was held at Morogoro. Members of the DPDT, ZRC and JICA Study Team were introduced each other, and overall schedule was agreed among them.

Status of the latest prepared DADP and constraints in preparing it were interviewed to the DPDT. Technical and educational background of the DPDT and ZRC members were confirmed by questionnaire to understand the situation before starting the training (see page B-4-16 to 17 and B-4-20 to 21 for the result). Before closing the meeting, schedule of the Step-2 activity was decided.

List of Records:

1. Outline of Kickoff Seminar
2. Attendance List
3. Summary Result of the Interview Survey
4. Record of Discussion
5. Findings
6. Photos

1. Outline of Kickoff Seminar

Date: May 20, 2004
Place: Morogoro Zonal Irrigation Office
Chairperson: Ms. Nnyiti (Zonal Irrigation Unit)
Facilitator: Mr. H. Shimazaki (Team Leader)
Mr. H. Ohnuma (Agriculture/Land Use)
Mr. J. Tsurui (Irrigation)
Ms. W. Yamamoto (Irrigation)
Material: Draft Guidelines for Irrigation Scheme Formulation for DADP

Program No.	Time	Program Title	Facilitator
1	10:00-10:05	Opening Address	Ms. Nnyiti
2	10:05-10:10	Introduction of members	Each Group
3	10:10-10:20	Objectives and Overall Schedule	Mr. Shimazaki
4	10:20-10:40	Explanation of the Guidelines 1 Introduction 2 Application Procedure of Irrigation Scheme Formulation	Mr. Shimazaki
5	10:40-11:20	Interview on the Status of the Latest DADP	Mr. Tsurui
6	11:20-11:40	Questionnaire on the status of DPDT/ZRC Members	Ms. Yamamoto
7	11:40-11:50	Formation of the DPDT and ZRC	Mr. Ohnuma
8	11:50-12:20	Preparation of Quick Site Inspection Schedule	Mr. Tsurui
9	12:20-12:30	Closing Address	Ms. Nnyiti

2. Attendance List

No.	Name	Organization
1	Dr. Abdu A. Hayghaimo	Mvomero District Office (DALDO)
2	Mr. Omari S. Omari	Mvomero District Office
3	Mr. Remijo J. Mpagama	Mvomero District Office
4	Ms. Mdule Kidawa Omari	Mvomero District Office
5	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
6	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
7	Mr. Seth Luswema	Morogoro Zonal Irrigation Unit (Observer)
8	Mr. Lait A. Simukanga	DITS, MAFS
9	Mr. Hitoshi Shimazaki	JICA Study Team
10	Mr. Hiroyasu Ohnuma	JICA Study Team
11	Mr. Jun Tsurui	JICA Study Team
12	Ms. Wakana Yamamoto	JICA Study Team

3. Summary Result of the Interview Survey

- Status of the Latest DADP -


Question	Answer
How many irrigation schemes were proposed in the latest DADP?	The latest DADP was prepared in the last year, before Mvomero district was structured. In the last year, Mvomero and Morogoro rural district was one administrative body, so one DADP was prepared for both of them. We proposed one irrigation scheme, whose name is Kiroka irrigation scheme. However, the scheme is located in new Morogoro rural district, so no irrigation scheme in new Mvomero district was proposed in the last year.
How did you choose that irrigation scheme as your proposal?	We visited several irrigation schemes and observed farmers willingness for irrigation development. As a result of site visit, we found that the farmers in Kiroka scheme have high potential for irrigation development. This is the reason why we recommended Kiroka scheme in the last DADP.

4. Record of Discussion



The following matters were discussed at the meeting..

- (1) It was agreed that the DPDT was organized by the following experts of Mvomero District Office.

District Project Development Team (DPDT)	
	
Name: Mr.Omari S. Omari Position: SMS for Irrigation	Name: Mr.Remijo J. Mpagama Position: SMS for Crop

	
<p>Name: Ms.Mdule Kidawa Omari Position: SMS for Extension</p>	<p>Note: SMS; Subject Matter Specialist</p>

- (2) It was confirmed that the ZRC for Mvomero district was organized by the following experts of Morogoro Zonal Irrigation Unit (ZIU).

Zonal Review Committee (ZRC)	
	
<p>Name: Ms.Eliamani Nnyiti Position: Senior Agriculture Officer</p>	<p>Name: Mr.David N. Chemka Position: Senior Executive Engineer</p>



- (3) It was decided that the quick site inspection (Step-2) was planned to be conducted May 24 - May 28. The site inspection was confirmed to be conducted from northern area (foot of the Nguru Mountains) to southern area (foot of the Uluguru Mountains).
- (4) It was agreed by all of the participants that the draft guidelines including scientific way of planning were going to be used for the irrigation scheme formulation in this year in Mvomero District. However, impractical description in the guidelines should be reported to the JICA Study Team by District or Zonal staffs and such kind of description should be improved in the rectified guidelines.

5. Findings

The following facts were found at the meeting.

- (1) It was found that social aspects had been deeply concerned in the past screening process of irrigation schemes by District staff. Necessity of scientific approach was also realized by the District staff, but financial and time constraints hindered them from introducing scientific approach. It was confirmed that the JICA Study Team need to revise the guidelines considering budget and time constraints of the DADP.

6. Photos

	
Explanation of the guidelines by the JICA Study Team.	Preparation of the quick site inspection schedule

Session II

Training on Scheme Formulation Step-2 in Mvomero District

Activities Carried Out:

Training on Step-2: Quick Site Inspection of All Irrigation Schemes was carried out in this session. Mvomero DPDT visited all the listed irrigation schemes (20 schemes) in the District and confirmed the site condition. During the site inspection, the DPDT tried to collect necessary data for Step-3: Screening of All Irrigation Schemes. After the site inspection, identified inconveniences on the survey sheet were rectified. Rectified survey sheet with actual data for 20 schemes are presented in page B-2-30 to 89.

List of Records:

1. Outline of Training on Step-2
2. Attendance List
3. Findings
4. Summary Result of the Questionnaire

1. Outline of Training on Step-2

Date: May 24 – May 27, 2004
 Place: Irrigation scheme sites
 Facilitator: Mr. J. Tsurui (Irrigation)
 Material: Draft Guidelines for Irrigation Scheme Formulation for DADP

Program No.	Date	Program Title	Facilitator
1	May 24	<u>Step-2:</u> Quick Site Inspection for All Irrigation Schemes Site inspection of following schemes. 1) Bwage scheme 2) Kanga scheme 3) Dihinda/Difinga scheme 4) Kwadoli scheme	Mr. Tsurui
2	May 25	<u>Step-2:</u> Quick Site Inspection for All Irrigation Schemes Site inspection of following schemes. 1) Ndole scheme 2) Digoma scheme 3) Komtonga scheme	Mr. Tsurui
3	May 26	<u>Step-2:</u> Quick Site Inspection for All Irrigation Schemes Site inspection of following schemes. 1) Mkindo scheme 2) Mgongola scheme 3) Dihombo scheme 4) Hembeti scheme 5) Dakawa scheme 6) Wami Luhindo scheme	Mr. Tsurui
4	May 27	<u>Step-2:</u> Quick Site Inspection for All Irrigation Schemes Site inspection of following schemes. 1) Bunduki scheme 2) Tchenzema scheme 3) Langali scheme 4) Mlali/Kipera scheme 5) Manza scheme 6) Tangeni scheme 7) Vikenge scheme	Mr. Tsurui

2. Attendance List

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Jun Tsurui	JICA Study Team

3. Findings

The following facts were found in the process of activity.

- (1) It was confirmed that the DPDT had to visit (i) irrigated (or potential) area, and (ii) water source in the quick site inspection. Taking this finding into account, it was agreed with all the participants that an instruction for the DPDT to visit such sites need to be described in the guidelines.
- (2) Effectiveness of applying handheld GPS in the scheme formulation was confirmed. Locations of the schemes were accurately measured by the DPDT using the handheld GPS.
- (3) Method of data collection (interview with beneficiaries or site observation) should be specified in the survey sheets for the quick site inspection to avoid misunderstanding.

4. Summary Result of the Questionnaire

Question	Answer
Organization:	District office 3 persons Zonal Irrigation Unit 2 persons
Subject contents:	“very satisfied” 2 persons “satisfied” 3 persons
Facilitator:	“very satisfied” 3 persons “satisfied” 2 persons
Facilities:	“very satisfied” 3 persons “satisfied” 2 persons
Timetable:	“very satisfied” 2 persons “satisfied” 2 persons “regular” 1 person
Material:	“very satisfied” 4 persons “satisfied” 1 person
Did you get interested in the topics?	“got much interested” 4 persons “got interested” 1 person
Important topic	“ <u>Visiting the source of water.</u> ”
-Keyword and why?-	-It enabled to decide whether the scheme will work or not “ <u>Selecting the candidates scheme with potential</u> ”

- The skill is helpful to the community and technicians
- “How to collect data/information, use of GPS, types of crops to be grown.”
- “Various development levels of irrigation schemes” (2 persons)
- I faced difficulty in evaluating status of irrigation schemes (ZIU staff).
- Some schemes are located far away and others are in mountainous areas. All these schemes need different kind of treatment at the time of development (ZIU staff).

Evaluation about your work	“much satisfactory”	3 persons
	“satisfactory”	2 persons
Suggestions and comments	“The training program should be emphasized to be practical.” (3 persons)	
	“It was good. I think it will result into a standard way of formulation of irrigation schemes in Tanzania (ZIU staff).”	
	“Timetable was too tight (congested)	
	“We could inform the beneficiaries prior to our site visit so that we meet the right people who could give realizable information (ZIU staff).”	

Session III

Training on Scheme Formulation Step-1, 3 and 4 in Mvomero District

Activities Carried Out:

In this session, training on Step-1: Confirmation of Irrigation Development Priority of the District, Step-3: Screening of All Irrigation Schemes, and Step-4: Assessment and Endorsement by Zonal Irrigation Unit were carried out. At first, the DPDT examined surveyed schemes based on the information obtained through the quick site inspection (Step-2). And then, the DPDT set their own criteria considering the district development priority and local condition to carry out the screening. As a result, Komtonga and Digoma schemes were selected for further study. The DPDT submitted the screening report to the Morogoro ZRC and the committee endorsed their result.

List of Records:

1. Outline of Training on Steps-1, 3 and 4
2. Attendance List
3. Record of Discussion
4. Photos
5. Findings
6. Summary Result of the Questionnaire

1. Outline of Training on Steps-1, 3, and 4

Date: May 31 – Jun 01, 2004
Place: Morogoro Zonal Irrigation Office
Facilitator: Mr. J. Tsurui (Irrigation)
Material: Draft Guidelines for Irrigation Scheme Formulation for DADP

Program No.	Time	Program Title	Facilitator
<u>May 31</u>			
1	10:00-10:30	Explanation on revised survey sheet for quick site inspection.	Mr. Tsurui
2	10:30-11:00	Use of revised survey sheet for quick site inspection with actual data collected.	
3	11:00-15:00	<u>Step-1:</u> Confirmation of Irrigation Development Priority of the District <u>Step-3:</u> Screening of All Irrigation Schemes	
<u>Jun 01</u>			
4	10:30-14:00	- do -	Mr. Tsurui
	14:00-15:00	<u>Step-4:</u> Assessment and Endorsement by Zonal Irrigation Unit	
5	15:00-15:10	Questionnaire on today's program	-
6	by next week	1) Finalize "Quick Site Inspection and Screening Report" (by DPDT)	
		2) Finalize "Official Letter on Assessment and Endorsement" (by ZRC)	

2. Attendance List

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Jun Tsurui	JICA Study Team

3. Record of Discussion

The following matters were discussed in the process of activities.

- (1) Before starting the screening, it was agreed that the screening should be made under the ownership of the District.
- (2) Before starting the screening, it was agreed with all the participants that the screening should be made in accordance with the procedure introduced in the Draft Guidelines. It was also confirmed that the criteria of screening could be modified based on the District development priorities, as described in the Draft Guidelines.
- (3) In Mvomero District, screening was made in the following procedure.
 - 1) First, following schemes were dropped out from the candidates.
 - a) The scheme currently receiving support from the government (schemes which have on-going project).
 - b) The scheme that require pump for abstracting water, taking its high operation and maintenance cost into account.
 - c) The scheme whose irrigation type is rain water harvesting considering their low potential comparing with gravity irrigation.
 - 2) Second, scoring on remaining candidate schemes was made. The criteria determined by the DPDT were as follows.
 - a) Potential for irrigation (availability of water and land resources)
 - b) Farmers' motivation to irrigation
 - c) Farmers' intention to contribute construction
 - d) Accessibility
 - e) Marketing
 - 3) Finally, highly scored candidate schemes were compared from the following viewpoints.
 - a) Necessity of the government support
 - b) Acquisition of water right
 - c) Equality of the government support between villages.
 - 4) As a result, Komtonga and Digoma schemes were selected as the schemes for the preliminary planning.
 - 5) The result of screening made by the DPDT was basically agreed with the ZRC.

4. Findings



The following facts were found in the process of activities. It was pointed out by the ZRC member that he/she might face difficulties on assessment and endorsement, if no instruction is provided on the following questions.

- 1) Which priority should be preceded if there is a discrepancy between the national and

district priorities? (National policy recommends putting high priority on the rehabilitation schemes though there is some possibility for district to choose new development scheme reasonably.)

- 2) How to verify that the district budget was properly allocated to irrigation sub-sector and other sub-sectors?
- 3) What should the DPDT do, if the road improvement is required together with irrigation development? (The road improvement is managed by the Ministry of Works but not by the agriculture sector.)

5. Photos

	
<p>The DPDT members are finalizing their own criteria for the scoring</p>	<p>The ZRC is assessing the DPDT prepared scoring result (NGO joined the meeting as a observer)</p>

6. Summary Result of the Questionnaire

Question	Answer	
Organization:	District office	3 persons
	Zonal Irrigation Unit	2 persons
Subject contents:	“very satisfied”	3 persons
	“satisfied”	2 persons
Facilitator:	“very satisfied”	2 persons
	“satisfied”	3 persons
Facilities:	“very satisfied”	1 person
	“satisfied”	4 persons
Timetable:	“very satisfied”	2 persons
	“satisfied”	3 persons
Material:	“very satisfied”	2 persons
	“satisfied”	3 persons
Did you get interested in the topics?	“got much interested”	4persons
	“got interested”	1 person

Important topic	“ <u>Screening of all irrigation schemes.</u> ”(4 persons)	
-Keyword and why?-	-It had a lot of factors to be considered. It was useful in the ranking of irrigation schemes.	
	“ <u>National irrigation policy.</u> ”	
	-I was not aware that more emphasis should be put forward to the established irrigation scheme instead of developing the new ones in the national policy.	
Evaluation about your work	“much satisfactory”	3 persons
	“satisfactory”	2 persons
Suggestions and comments	<p>- About this session -</p> <p>“Priority should be given to all areas which meet the criteria for selection regardless of their requirements, either for rehabilitation or new development.”</p> <p>“The economic effect by IRR should be considered seriously while selecting a scheme whether it is a new development or a traditional/ improved (ZIU staff).”</p> <p>“1) Villages and wards should be assisted to formulate irrigation schemes so that development of irrigation come up high in their plans (this can be done by awareness creation or training by District staff). 2) If a District select a scheme which does not rank high according to (national) irrigation policy, say a new scheme, should the ZIU endorse it or not? 3) Land ownership/tenure inside scheme area should be known before screening to avoid selecting a scheme that has large areas belonging to few individuals (e.g. Manza scheme). 4) I suggest that scheme size become one of the screening criteria to avoid selecting large schemes that required huge amount of money for development (ZIU staff).”</p> <p>- General -</p> <p>“The programme is very useful to me. This will improve my working efficiency as far as irrigation farming is concerned. I am pleased because most of the activities are done by practice.”</p> <p>“The training program should be practice oriented, by involving field work, so that we become well knowledgeable about irrigation activities right from planning up to implementation.”</p>	

Session IV

Training on Scheme Formulation Step-5 in Mvomero District

Activities Carried Out:

In this session, training on Step-5: Field Survey for Selected Irrigation Schemes was carried out. The Mvomero DPDT conducted field survey consists of 1) interview survey with stakeholders, 2) preparation of village resource map, 3) confirmation of site conditions, and 4) preparation of present situation map for the selected irrigation schemes that are Komtonga and Digoma schemes. Since the rectification of the guidelines based on the experience in Mkuranga District had been completed, the Mvomero DPDT could apply rectified guidelines for their planning. After the field survey, further rectification was made to cope with difficulties faced in the survey in Mvomero. In the field survey, counterparts from MANREC of Zanzibar joined the activities to share the knowledge in irrigation scheme formulation.

List of Records:

1. Outline of Training on Step-5
2. Attendance List
3. Record of Discussion
4. Photos
5. Findings
6. Summary Result of the Questionnaire

1. Outline of Training on Step-5

Date: June 14 – June 21, 2004
 Place: Irrigation scheme sites
 Facilitator: Mr. H. Ohnuma (Agriculture/Land Use)
 Mr. J. Tsurui (Irrigation)
 Ms. W. Yamamoto (Irrigation)
 Material: Rectified Guidelines for Irrigation Scheme Formulation for DADP based on
 the experience in Mkuranga District

Program No.	Date	Program Title	Facilitator
1	June 14	<u>Confirmation of the past activities</u> 1) Quick site inspection 2) Screening of irrigation schemes	Mr. Ohnuma Mr. Tsurui Ms. Yamamoto
		<u>Preparatory Works</u>	
2	June 15	<u>Step-5:</u> Field Survey for Selected Irrigation Schemes <u>for Komtonga scheme</u> 1) Interview Survey with Stakeholders 2) Preparation of Village Resource Map 3) Making Agreement on the Study Area 4) Confirmation of Site Condition	- do -
3	June 16	<u>Step-5:</u> Field Survey for Selected Irrigation Schemes <u>for Digoma scheme</u> 1) Interview Survey with Stakeholders 2) Preparation of Village Resource Map 3) Making Agreement on the Study Area 4) Confirmation of Site Condition	- do -
4	June 17	Discussion on the Result of Field Survey	- do -
5	June 18, 19, and 21	Preparation of Present Situation Map	None

2. Attendance List

June 14-16

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Shaaban A. Shaaban	MANREC, Zanzibar
7	Mr. Mchenga S. Mchenga	MANREC, Zanzibar
8	Mr. Andreas S. Mbinga	MANREC, Zanzibar
9	Mr. Shaarme Matta Shaame	MANREC, Zanzibar
10	Mr. Rashid R.H.	MANREC, Zanzibar
11	Mr. Hiroyasu Ohnuma	JICA Study Team
12	Mr. Jun Tsurui	JICA Study Team
13	Ms. Wakana Yamamoto	JICA Study Team

June 17

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. Shaaban A. Shaaban	MANREC, Zanzibar
6	Mr. Mchenga S. Mchenga	MANREC, Zanzibar
7	Mr. Andreas S. Mbinga	MANREC, Zanzibar
8	Mr. Shaarme Matta Shaame	MANREC, Zanzibar
9	Mr. Rashid R.H.	MANREC, Zanzibar
10	Mr. Hiroyasu Ohnuma	JICA Study Team
11	Mr. Jun Tsurui	JICA Study Team
12	Ms. Wakana Yamamoto	JICA Study Team

June 18

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit

June 19

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit

June 21

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Shaaban A. Shaaban	MANREC, Zanzibar
7	Mr. Mchenga S. Mchenga	MANREC, Zanzibar
8	Mr. Andreas S. Mbinga	MANREC, Zanzibar
9	Mr. Shaarme Matta Shaame	MANREC, Zanzibar
10	Mr. Rashid R.H.	MANREC, Zanzibar
11	Ms. Wakana Yamamoto	JICA Study Team

3. Record of Discussion

The following matters were discussed in the process of activity.

Confirmation of the past activities

- (1) Before starting the field survey, the ZRC informed the DPDT that the quick site inspection and screening report was basically accepted by the ZRC. It was also informed that the photocopy of the report was submitted to the DIMU of DITS for data and information management.

4. Findings

The following facts were found in the process of activity..

- (1) It was confirmed that the rectified guidelines based on the experience in Mkuranga District could function far better than the original one (Draft Guidelines). However, it was also found that further improvement should be made on the following points.
 - Request of supplying useful data from the database system at the DITS should be started immediately after completion of the previous step (Step-4), not in the beginning of this step (Step-5), since certain time is required to prepare and transmit the data.
 - Importance of the following activities need to be emphasized in the guidelines, since smooth implementation of the following activities were found to be key factors for the efficient field survey.
 - (i) Confirm the role of each DPDT member prior to start the survey.
 - (ii) Inform the survey schedule to the villages prior to the survey.
 - (iii) Obtain data on natural condition using the useful equipment such as handheld GPS and EC meter.
 - (iv) Prepare required survey sheets and material for the resource mapping such as paper and pens prior to start the mapping.

- It was decided by the JICA Study Team to insert indicators in the Guidelines to conduct field survey more efficiently. For example, at the bottom of explanation on some activity, a indicator will be inserted to guide the DPDT to next activity smoothly.
- (2) Various comments and suggestions were obtained from the DPDT and ZRC for further improvement of the survey sheets for interview survey as shown below;
- Since it was suggested that the land use data should be collected from the village extension officer rather than farmers, such kind of description was added as an explanatory note for this question.
 - It was decided to improve the question on crop production by asking farmers to select two major crops for rainy and dry seasons separately instead of asking them to choose three major crops.
 - It was also decided to improve the question on input supply by changing the way of asking.
 - The questionnaire on irrigators' associations was further simplified by deleting the insignificant questions.
 - Other minor suggestions obtained from participants that could make villagers easier to answer were reflected on the questionnaires.
- (3) The process of preparing the village resource map by a small group and confirmation of the map by presenting it in front of the other villagers were proved to be workable. However, it was found to be difficult for the some DPDT members to have a image of output (village resource map). To cope with this difficulty, it was decided to show a photograph of sample map actually prepared by the villagers in the Guidelines instead of the sample map prepared by computer.
- (4) In the process of reaching agreement on the survey area by stakeholders, it was found to be convenient to have a discussion in front of the village resource map. It was therefore decided by the JICA Study Team to add the process of presenting the village resource map by the mapping group to other villagers as one of the sub-steps in this activity.
- (5) As for the confirmation of the field condition, it was decided to change the position of the "sub-step: confirm the field drainage condition" next to the "sub-step: confirm the soil properties" because the soil properties and the drainage conditions were closely related each other. The survey sheets were further improved in the following manner;
- The process to determine the general soil texture type from the result of field measurement was clearly instructed in the Guidelines, since the general soil texture type is necessary to estimate the irrigation water requirement.
 - It was decided to add the question of highest flood level to the survey sheet, since the information is necessary for drainage planning.
 - As for the measurement of the river discharge, it was decided to modify the survey

sheets by providing the column for the today's measurement results.

- (6) Concerning preparation of present situation map, the work was designed to be composed of three major parts: 1) preparatory work before the survey, 2) measuring the location at the site, and 3) plotting measured coordinates on the graph paper. It was found to be very important for the DPDT members to get familiar with use of handheld GPS before visiting the sites. It was also confirmed to be important to decide the survey route and locations to be measured using the village resource map prior to the survey.

5. Photos

	
<p>Mvomero DPDT is explaining their past activities to Zanzibar MANREC counterparts</p>	<p>Simple soil texture test at Komtonga scheme</p>
	
<p>Simple water quality test at Komtonga scheme</p>	<p>Villagers are preparing resource map under the guidance of the DPDT at Digoma scheme</p>

	
Discussion with villagers at Digoma scheme	Simple river discharge measurement at Digoma scheme
	
Preparation of the present situation map (measuring coordinates of the point using GPS)	Preparation of the present situation map (plotting measured coordinates)

6. Summary Result of the Questionnaire

Question		Answer
Organization:	District office	3 persons
	Zonal Irrigation Unit	2 persons
	MANREC of Zanzibar	5 persons
Subject contents:	"very satisfied"	6 persons
	"satisfied"	4 persons
Facilitator:	"very satisfied"	6 persons
	"satisfied"	4 persons
Facilities:	"very satisfied"	7 persons
	"satisfied"	3 persons
Timetable:	"very satisfied"	3 person
	"satisfied"	5 persons
	"regular"	1 person
	"not satisfied"	1 person
Material:	"very satisfied"	5 persons
	"satisfied"	5 persons

Did you get interested in the topics?	“got much interested” 9 persons “got interested” 1 person
Important topic -Keyword and why?-	
Preparatory works	<p>“<u>Before the field work.</u>”</p> <p>- I gained a knowledge that we have to make preparation on what we are expected to do before going to the field.</p> <p>“<u>Division of Activities</u>”</p> <p>- It is very important for all the members to be assigned his/her activities before going to the field, to avoid wasting the time in the field (MANREC staff).</p> <p>“<u>Collection of data & maps from DIMU of DITS.</u>”</p> <p>-It might be difficult to access the data (ZIU staff).</p>
Evaluation about your work	<p>“much satisfactory” 6 persons</p> <p>“satisfactory” 2 persons</p>
Interview survey with stakeholders	<p>“<u>Collection of data on present condition.</u>”</p> <p>-This enabled us to know exactly how far the villages know of their situations and environment surrounding (MANREC staff).</p> <p>“<u>Agriculture</u>”</p> <p>-The survey team could understand existing agricultural practices (ZIU staff).</p>
Evaluation about your work	<p>“much satisfactory” 6 persons</p> <p>“satisfactory” 3 persons</p>
Village resource mapping	<p>“<u>Preparation of the map.</u>” (2 persons)</p> <p>-The map gave you the picture of village resources and existing institutions (ZIU staff).</p> <p>“<u>Group discussion.</u>”</p> <p>-It was interesting to see villagers arguing one another about the village boundaries.</p>
Evaluation about your work	<p>“much satisfactory” 6 persons</p> <p>“satisfactory” 2 persons</p>
Making agreement on the study area	<p>“<u>Giving explanation about the intended work.</u>”</p> <p>-This will clear out doubts and brings harmony in future work if implemented.</p> <p>“<u>Selection of priority area by villagers.</u>”</p> <p>-It was interesting to see the stakeholders coming to agreement after some differences. It is a good participatory planning. (MANREC staff).</p> <p>“<u>Knowing the beneficiaries.</u>”</p> <p>-It was difficult to get good forum for expected beneficiaries. (ZIU staff).</p>
Evaluation about your work	<p>“much satisfactory” 8 persons</p> <p>“satisfactory” 1 person</p>
Confirmation of field condition	<p>“<u>Asking farmers about drainage and floods.</u>”</p> <p>-This will help to determine salinity condition of the field and make a decision later in planning.</p> <p>-Farmers revealed that flooding was one of the problems they are facing (ZIU staff).</p>

	<p><u>“Confirmation of field condition”</u> -By obtaining the farmers experience, we could understand the field condition (MANREC staff).</p> <p><u>“All of them”</u> -It gives chance to observe and verifies the map and have additional information. (MANREC staff).</p>	
Evaluation about your work	<p>“much satisfactory” 7 persons</p> <p>“satisfactory” 2 persons</p>	
Preparation of present situation map	<p><u>“Plotting the coordinates.”</u> -This could make further planning easier. Especially, the distance from one point to the next can contribute to estimate the construction cost of roads and canals.</p> <p><u>“Provide grids on topographical map.”</u> -Plotting UTM coordinates of field boundaries and important features of project area enabled us to prepare the map. (ZIU staff).</p> <p><u>“Preparation of present situation map.”</u> -Use of GPS was a very rapid method of surveying and preparing a map which is useful for planning. (MANREC staff).</p> <p><u>“Understanding thorough what is required.”</u> -I got experience with Komtonga scheme where work did not go smoothly due to poor preparation by team members. (ZIU staff).</p>	
Evaluation about your work	<p>“much satisfactory” 7 persons</p> <p>“satisfactory” 3 persons</p>	
Suggestions and comments	<p>“The training is very useful, but time allocated for field work was not enough. In spite of budget deficit, this may be considered of possible, to make field work thoroughly done.” (4 persons)</p> <p>“More time is needed to practice the knowledge and skills acquired.”</p> <p>“Stress should be put on preparatory works. (ZIU staff).”</p> <p>“It was quite good. Some key equipment like GPS and EC meters should be provided to ZIU and district irrigation office. (ZIU staff).”</p> <p>“The program was very good and useful for irrigation planning. (MANREC staff).”</p>	

Session V

Training on Scheme Formulation Step-6 in Mvomero District

Activities Carried Out:

In this session, training on Step-6: Preliminary Planning for Selected Irrigation Schemes was carried out. The Mvomero DPDT made preliminary planning for Komtonga and Digoma schemes based on the information collected through the field survey (Step-5). Those procedures were carried out in the manners of: (i) explanation on the procedure by the JICA Study Team, (ii) practice by the DPDT using the draft guidelines, (iii) confirmation of the result by the DPDT, ZRC and the JICA Study Team. The DPDT accomplished the whole planning process: water balance study, scheme development planning and cost estimate, calculation of scheme incremental benefit, and scheme evaluation. As a result, Komtonga scheme was determined to be proposed in the next DADP. The DPDT prepared plan for Komtonga scheme is shown in page B-2-90 to 114.

List of Records:

1. Outline of Training on Step-6
2. Attendance List
3. Findings
4. Photos
5. Summary Result of the Questionnaire

1. Outline of Training on Step-6

Date: June 22 – June 25, 2004
 Place: Irrigation scheme sites
 Facilitator: Mr. H. Ohnuma (Agriculture/Land Use)
 Mr. J. Tsurui (Irrigation)
 Ms. W. Yamamoto (Irrigation)
 Material: Rectified Guidelines for Irrigation Scheme Formulation for DADP based on
 the experience in Mkuranga District

Program No.	Date	Program Title	Facilitator
1	June 22	Explanation on procedure of <u>Step-6:</u> Preliminary Planning for Selected Irrigation Schemes	Mr.Ohnuma Mr.Tsurui Ms. Yamamoto
2	June 23	<u>Step-6:</u> Preliminary Planning for Selected Irrigation Schemes Planning of the two schemes by DPDT, ZRC and MANREC, respectively	None
3	June 24	Confirmation of the planning result	Mr.Ohnuma Mr.Tsurui Ms. Yamamoto
4	June 25	Supplementary survey at scheme sites	- do -

2. Attendance List

June 22, 24 and 25

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Shaaban A. Shaaban	MANREC, Zanzibar
7	Mr. Mchenga S. Mchenga	MANREC, Zanzibar
8	Mr. Andreas S. Mbinga	MANREC, Zanzibar
9	Mr. Shaarme Mata Shaame	MANREC, Zanzibar
10	Mr. Rashid R.H.	MANREC, Zanzibar
11	Mr. Hiroyasu Ohnuma	JICA Study Team
12	Mr. Jun Tsurui	JICA Study Team
13	Ms. Wakana Yamamoto	JICA Study Team

June 23

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Shaaban A. Shaaban	MANREC, Zanzibar
7	Mr. Mchenga S. Mchenga	MANREC, Zanzibar
8	Mr. Andreas S. Mbinga	MANREC, Zanzibar
9	Mr. Shaarme Mata Shaame	MANREC, Zanzibar
10	Mr. Rashid R.H.	MANREC, Zanzibar

3. Findings

The following facts were found in the process of the activity.

- (1) Confusion of using term “area” was identified in the process of planning, since various types of “area” were used in the guidelines, such as “development area”, “potential area”, “proposed area”, etc. It was pointed out by the participants that definition of those terms should be clearly explained in the terminology of the guidelines.
- (2) In the process of planning, it was found that some information needed to be confirmed again on site since it was found not to be accurate, especially for yield of Komtonga scheme. The DPDT visited Komtonga scheme again and collected detailed information. Through this experience, necessity of confirming data after preparing scheme development plan on site was realized.
- (3) In the draft guidelines, it was recommended to estimate irrigation water requirement by

setting cropping pattern. However, it was found to be difficult by the following reasons.



- a) The DPDT could not choose the proper cropping pattern from the rainfall pattern, since the DPDT members, who had not much experience in irrigation, could not set proper cropping pattern after irrigation system application (cropping pattern after irrigation system application might not be the same as the present cropping pattern under rainfed condition).
- b) It was difficult for the DPDT to select appropriate cropping pattern from several candidate patterns.

Therefore, the JICA Study Team decided to simplify the process of estimating irrigation water requirement

- (4) It was confirmed that there was no major problem on the scheme cost estimation.
- (5) It was found that the scheme benefit estimation could not be made smoothly. The reasons were as follows.
 - a) The Guidelines did not clearly explain that the scheme incremental benefit should be estimated based on the development area determined through the water balance study both under “with and without project” conditions.
 - b) It was difficult for the DPDT to estimate the cropped area in the development area under “without project” condition.
 - c) It was difficult for the DPDT to determine the strategic crop for the scheme and also to estimate the target yield of the strategic crop under “with project” condition by taking the present conditions and the farmers’ requirement into consideration.
- (6) It was found to be very important to understand required accuracy of the planning for the DADP before starting the planning. The JICA Study Team explained that longer time and higher cost are needed to prepare more accurate irrigation development plan. It was also explained by the JICA Study Team that required data to formulate accurate plan was also insufficient, so that the feasibility study level detailed plan should be prepared after getting sufficient data such as monthly river discharge.
- (7) There was a discussion about contents of the guidelines. The following two options were taken up in the discussion.
 - a) The guidelines show only practical way of planning in DADPs and theories of planning should be obtained from text books, and
 - b) The guidelines contain both of practical way of planning in DADPs and theories of planning.

The former was agreed by the DPDT and ZRC, since inclusion of theoretical explanation increases the volume of guidelines and such explanation can be obtained from the text books.

4. Photos

	
<p>The JICA Study Team is explaining procedure to prepare the scheme development plan</p>	<p>The JICA Study Team is explaining procedure to estimate scheme benefit</p>

5. Summary of Result of the Questionnaire

Question	Answer
Organization:	District office 3 persons Zonal Irrigation Unit 2 persons Ministry of Agriculture, Natural Resources, Environment and Cooperatives (MANREC) 5 persons
Subject contents:	“very satisfied” 7 persons “satisfied” 2 persons
Facilitator:	“very satisfied” 8 persons “satisfied” 2 persons
Facilities:	“very satisfied” 9 persons “satisfied” 1 person
Timetable:	“very satisfied” 3 person “satisfied” 6 persons “regular” 1 person
Material:	“very satisfied” 5 persons “satisfied” 5 persons
Did you get interested in the topics?	“got much interested” 9 persons “got interested” 1 person
Important topic -Keyword and why?-	
Irrigation water requirement estimation and water balance study	“ <u>Water balance study</u> ” -It was able to estimate the command area “ <u>Calculation of the water requirement in dry season</u> ” -This was enable to estimate what crop and which area to be irrigated “ <u>Water balance calculation</u> ” -It was an important part that gives an indication of feasibility of the project even at this preliminary stage. (MANREC staff).

	<u>“Calculation of net water requirement”</u>	
	-The topic contained variables that need a careful attention. (ZIU staff).	
Evaluation about your work	“much satisfactory”	7 persons
	“satisfactory”	3 persons
Scheme development planning	<u>“Calculation of the scheme cost”</u>	
	-It gave an implication to summarize cost of the project before it takes off.	
	-I was not aware the simplified method of cost estimate.	
	<u>“Cost estimate of irrigation facilities”</u>	
	-This topic gave standard rates which can help one to estimate a cost of a structure (ZIU staff).	
Evaluation about your work	“much satisfactory”	7 persons
	“satisfactory”	2 persons
Estimation of scheme incremental benefits and development costs	<u>“Scheme benefit estimates”</u>	
	-This topic contained some factors which should be estimated correctly (ZIU staff).	
	<u>“Internal rate of return”</u>	
	-It was a turning point whether to proceed with the project or drop (MANREC staff).	
Evaluation about your work	“much satisfactory”	5 persons
	“satisfactory”	5 persons
Environmental consideration	<u>“Environment impact assessment”</u>	
	-It was equally important to take into consideration all issues related to environment before the project take off	
	<u>“Environmental consideration”</u>	
	-The topic was not very much exhaustive because we didn't face the severe environmental problems.	
Evaluation about your work	“much satisfactory”	4 persons
	“satisfactory”	6persons
Scheme evaluation and prioritization	<u>“Efficiency of the project”</u>	
	-This was related with the economic point of view of the project	
	<u>“How is the work carried out.”</u>	
	-The interpretation of dependability, efficiency, equity and adequacy could be helpful in evaluation of projects. (ZIU staff).	
Evaluation about your work	“much satisfactory”	5 persons
	“satisfactory”	3 persons
Suggestions and comments	“More training is needed for District staff.” (2 persons)	
	“I suggest the guideline need to be modified to suit the users. District staffs need more training to be conversant with the lessons.”	
	“The guidelines need to be described clearly especially for incremental benefit estimation. (ZIU staff).”	
	“The training is useful, but more time should be allocated for other Districts. A TOT (training of trainers) may be coordinated at the zonal level, and disseminate to the districts. (MANREC staff).”	

Session VI

Training on Scheme Formulation Step-7 to 12 in Mvomero District

Activities Carried Out:

In this session, training on Steps-7 to -12, identification and design of district supporting programme, preparation of irrigation scheme formulation plan report, and feedback workshop, were carried out. The Mvomero DPDT prepared district supporting programmes based on the information obtained through the former planning process. Then the DPDT submitted irrigation scheme formulation report, which was summary of preliminary planning result and district supporting programmes, to the Morogoro ZRC. After it was acknowledged by the ZRC, feedback workshops were held for the selected and non-selected irrigation schemes (Komtonga and Digoma schemes) by the DPDT to explain the planning results to the villagers.

List of Records:

1. Outline of Training on Steps-7 to 12
2. Attendance List
3. Findings
4. Photos
5. Summary Result of the Questionnaire

1. Outline of Training on Step-7 to 12

Date: July 5 – July 12, 2004
 Place: District office
 Facilitator: Mr. H. Ohnuma (Agriculture/Land Use)
 Mr. J. Tsurui (Irrigation)
 Ms. W. Yamamoto (Irrigation)
 Material: Draft Guidelines for Irrigation Scheme Formulation for DADP

Program No.	Date	Program Title	Facilitator
1	July 5	Confirmation of the result of preliminary planning Discussion about the past training sessions <u>Steps-7 and -8:</u> Preparation of District Supporting Programme	Mr.Ohnuma Mr.Tsurui Ms. Yamamoto
2	July 8	<u>Steps-9:</u> Preparation of Irrigation Scheme Formulation Plan Report <u>Steps-11:</u> Feedback workshop for the Selected Irrigation Schemes Explanation on how to conduct <u>Step-12:</u> Finalize Irrigation Scheme Formulation Plan for DADP	Mr.Ohnuma
3	July 12	Explanation of the planning result to DALDO	(none)

2. Attendance List

July 5

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Hiroyasu Ohnuma	JICA Study Team
7	Mr. Jun Tsurui	JICA Study Team
8	Ms. Wakana Yamamoto	JICA Study Team

June 8

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office
4	Ms. Eliamani Nnyiti	Morogoro Zonal Irrigation Unit
5	Mr. David N. Chemka	Morogoro Zonal Irrigation Unit
6	Mr. Hiroyasu Ohnuma	JICA Study Team

June 12

No.	Name	Organization
1	Mr. Omari S. Omari	Mvomero District Office
2	Mr. Remijo J. Mpagama	Mvomero District Office
3	Ms. Mdule Kidawa Omari	Mvomero District Office

3. Findings

The following facts were found in the process of activity.

Confirmation of the result of preliminary planning

- (1) It was suggested by the DPDT that more time should be spent on the survey for the mapping and field data collection. It was also suggested that more explanation should be given to the planning work because the team members were not familiar with some term.
- (2) A little confusion in the determination of the irrigable area in each season in the water balance study was observed.
- (3) It was also observed that the estimation of the crop yield under “with project” condition was still difficult for the DPDT without suitable instruction from the ZRC.



Activities for Step-7 to 12

- (4) Regarding the prioritization of the selected schemes, the DPDT was apt to prioritize the schemes rather mechanically based on the result shown on the prioritization sheet. The JICA Study Team member explained that the sheet was just the tool and the final prioritization could be made in accordance with the District irrigation development priority and other related factors.
- (5) There were several recommendations from the staff of ZRC for the improvement of guidelines such as the insertion of survey date into the survey sheet and showing the sample legend of the village resource map.
- (6) As for the preparation of the scheme digest, it was observed that a suitable indicator might be needed for the DPDT to work out the time schedule of the institutional development.
- (7) It was found that the special explanation was needed for the word “district supporting programmes”, since it is new for the DPDT.
- (8) In the process of the identification of district supporting programmes, the problems which

were not related to the irrigation sub-sector were going to be selected. It was therefore emphasized that the problems of irrigation sub-sector should only be selected as themes of the district supporting programmes.

- (9) For the design of district supporting programmes, it was difficult for the DPDT to express the multi-year programme especially in the articles of time schedule and cost.
- (10) The feedback workshop at the scheme that was selected as the first candidate for DADP was successful due to the following reasons.
- a) The villagers could clearly understand the direction of future development through the discussion carried out in the workshop.
 - b) The necessity of acquiring the water right and establishment of irrigators' association was discussed among the villagers.
 - c) The redistribution of the land after the scheme development was also discussed and the villagers confirmed that the land tenure system would be maintained as the present situation.
 - d) The importance of the periodical measurement of the river discharge was confirmed and the record keeper was nominated at the same time.
- (11) The feedback workshop at the scheme that was not selected as the first candidate for DADP was also successful due to the following reasons.
- a) The village chairperson encouraged the villagers that they had to be active in the irrigation development since more active scheme was selected for the further development.
 - b) The villagers decided to arrange a study tour to the advanced schemes such as Komtonga and Mkindo under the guidance of the extension officer.

4. Photos

	
<p>Explanation of the planning results to the villagers at Komtonga Scheme (Selected)</p>	<p>Explanation of the planning results to the villagers at Digoma Scheme (Non-selected)</p>

5. Summary of Result of the Questionnaire

Question	Answer
Organization:	District office 3 persons Zonal Irrigation Unit 2 persons
Subject contents:	“very satisfied” 3 persons “satisfied” 2 persons
Facilitator:	“very satisfied” 3 persons “satisfied” 2 persons
Facilities:	“very satisfied” 2 persons “satisfied” 3 persons
Timetable:	“very satisfied” 2 persons “satisfied” 2 persons “regular” 1 person
Material:	“very satisfied” 3 persons “satisfied” 2 persons
Did you get interested in the topics?	“got much interested” 5 persons
Important topic -Keyword and why?-	
Identification of District Subject-wise Development Plan and Design of the Subject-wise Development Plan	<p>“<u>Design of District supporting programmes.</u>”</p> <p>-This will guide the DPTDT to proper budgeting and attain the goal.</p> <p>“<u>Farmers’ training for irrigation Development.</u>”</p> <p>-Farmers should be trained before the implementation of the project.</p> <p>-During quick site visits and field survey, farmers were observed not to have basic knowledge on irrigation practices (ZIU staff).</p>
Evaluation about your work	<p>“much satisfactory” 2 persons</p> <p>“satisfactory” 3 persons</p>
Feedback Workshop	<p>“<u>Giving the farmers the feed back.</u>”</p> <p>-Explaining the results to the villagers is important.</p> <p>-Telling the farmers whether their scheme have been proposed or not proposed was really a challenge.</p> <p>“<u>Inform the farmers about the result of the study.</u>”</p> <p>-Farmers need to know if they are going to be assisted (ZIU staff).</p>
Evaluation about your work	<p>“much satisfactory” 4 persons</p> <p>“satisfactory” 1 person</p>
Suggestions and comments	“Farmers should be advised where to improve their irrigation practices (ZIU staff).”