

Kingdom of Cambodia
Nation Religion King



Module 4
On
Implementation of Participatory
Irrigation Management and
Development at Provincial and
Irrigation System Levels

Prepared by: Ministry of water Resources and Meteorology

Dated: 22 / October / 2003

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**TRAINING MANUAL FOR
PARTICIPATORY IRRIGATION MANAGEMENT AND DEVELOPMENT
IN CAMBODIA**

Module 4

**IRRIGATION SYSTEM MANAGEMENT BY THE
FARMER WATER USERS COMMUNITY**

Session 1: Classroom Training

1. *Review of Module 3*

1. Reporter presents brief summary of Module 3, Session 1. This is followed by questions and answers for clarification.
2. Someone presents results of the Working Group Assignment for Module 3, Session 2. This is followed by discussion.

2. *Overview of Module 4*

The objectives of Module 4 are as follows:

1. In the process of organizing the FWUC, to build capacity among farmers to analyze problems and alternative solutions for irrigated agriculture and irrigation system management.
2. To provide basic knowledge and skills to prospective FWUC representatives, through members of the FWUC Support Team, and possibly other local government staff, to enable the Support Team to build strong capacity within the “embryo FWUC” (or “pre-FWUC”) to manage their irrigation system in a productive and sustainable manner, consistent with the aspirations and irrigation service objectives of the farmers themselves.
3. To promote appreciation among FWUC representatives about the importance of, and methods for, identifying clear irrigation service objectives through a process of democratic consensus building among FWUC members.
4. To provide the necessary knowledge and skills to FWUC representatives to manage their irrigation system in a productive and sustainable manner, consistent with the farmer consensus about irrigation service objectives.
5. To provide the necessary knowledge and skills to FWUC representatives to enable them to develop a locally appropriate FWUC constitution and by-laws, consistent with their agreed irrigation service objectives.

It is expected that Module 4 will produce the following outcomes:

1. Farmers will develop a stronger and clearer group perspective about problems related to their irrigated agriculture and irrigation system management and about the future directions they wish to take.
2. FWUC Support Team members will function effectively to build capacity in the “embryo FWUC” to manage their irrigation systems effectively.

3. FWUC representatives will be able to build consensus among farmers about irrigation service objectives.
4. FWUC representatives will be able to develop and implement an Irrigation Service Plan that is acceptable to prospective FWUC members.
5. Written reports of results of the PRA's on Irrigated Agriculture and Irrigation System Management.
6. Summary of module discussion and results of exercises.

3. *Problems with Irrigation System Management*

There is a general recognition that irrigation systems are not being managed well and that financing and system maintenance are inadequate. Parts of the system get too much water, other parts get too little. Water is wasted or lost in conveyance. Water arrives at the farm too late. It's delivery is unpredictable. Sometimes farmers steal water and get into conflicts. There may be no coordinated arrangements among farmers to prepare land, plant crops or apply water on the field according to any kind of schedule. This may result in problems with pests, weeds, waterlogging, or drought. Irrigation canals are often in disrepair, which leads to heavy losses of water in conveyance. Because of collapsed embankments and breaches in canals not enough water reaches the tail end of canals. All of these problems result in low productivity and higher risks to farmers.

The government, by itself, cannot finance and manage the large number of small and medium size irrigation systems in the country. Participatory irrigation management and development (PIMD) is recognized as an important process and a measure for improving irrigation utilization, ensure better maintenance of the system, minimize tail-end problems, and improve the overall economy of the area.

In the year 2000, the Royal Government of Cambodia (RGC) adopted the PIMD policy, which mandates the establishment, empowerment and transfer of responsibility of management, financing and development of irrigation systems to Farmer Water User Communities (FWUC). With the new policy, the government will shift its emphasis from directly managing irrigation systems to building the capacity of FWUC to manage their own systems.

Therefore, there is a need to build the skills and capacities of FWUC, to enable them to function effectively, and to cope with many of the day-to-day problems. This module provides information on how farmers can prepare and implement an Irrigation Service Plan, which consists of a component on water delivery and drainage, a component on maintenance, and a component on financial management. This will enable both FWUC members and staff of the Department of Irrigated Agriculture to work together effectively in a new partnership based on PIMD.

4. *Participatory Rural Appraisals*

Participatory rural appraisal (PRA) is a method for rural people to analyze their local situation and to characterize local patterns, problems and options for development. The purpose of the PRA is to build capacity among farmers to identify and analyze problems and plan solutions through a process of group consensus building. It gives farmers experience in discussing, decision-making, and working

together as a group. It shows the farmers that the purpose of PIMD is not just to organize FWUC to follow the program of the government. Rather, it is to empower farmers to act collectively to solve their own problems in irrigated agriculture and to work together with the government as partners in development.

The knowledge and ideas generated from PRA are often recorded and summarized in the form of simple diagrams, such as time lines, maps, venn diagrams, decision trees, flow charts, and so on.

4.1 Principles for implementing Participatory Rural Appraisal (PRA)

PRA should be conducted during Step 1 as part of the process of facilitating farmers to form an FWUC. The FWUC Support Teams should receive training in PRA and should meet with groups of farmer representatives during Step 1 and implement two PRA sessions with the farmers. One PRA will be about agriculture and livelihood strategies and the other PRA will be about irrigation system management and development.

The purpose of the PRA meetings is to help farmers, as a group, to identify--*through their own analysis*--the aspirations, constraints, and opportunities they face in order for them to improve their irrigated agriculture and irrigation system management and development.

Protocol for PRA meetings

In PRA meetings, all participants should feel free to contribute their views and opinions. It should be an exchange of experiences, knowledge and suggestions. The attitude should be, "Nobody knows everything and everybody has something to contribute." Participants should: be patient, be modest, be informal and open, be willing to listen to others, and be impartial and concerned about the interests of all farmers in the irrigation system (not thinking only about factional interests).

Normally, a PRA has no more than about 15 farmer representatives who participate at any time. With more than this, many will not speak and speakers may feel intimidated to speak out freely. To the greatest extent possible, participants should be selected to represent a cross-section of all kinds of water users in the irrigation system (or sub-section of the irrigation system, as the case may be). This should include the head, middle, and tail ends of the irrigation system. It should include a fair representation of landless or smallholder cultivators. Care should be taken to avoid selecting mostly village officials, large landholders, local powerful elites or only elders. Women should also be included, or if necessary, a separate PRA can be held for them. Women often play particular roles in agriculture, irrigation and/or domestic water use, so their needs, views and assets should be an important part of the process of forming FWUC and building capacity.

In order to demonstrate a democratic process at the beginning of the FWUC formation stage, it may be a good idea to call for a general meeting of all farmers in the irrigation system. In this meeting, the FWUC Support Team can explain the objectives, basic principles and process for the PIMD Program. Also, the FWUC Support Team coordinator can request the farmers to explain the differences among

farmers in the system in terms of location along the canals, size of landholdings, owners or agricultural laborers, etc. Then, the FWUC Support Team coordinator can ask the group to select 10 to 15 farmers who represent each of these differences to participate in the PRAs.

What are the roles of facilitator and recorder?

Each PRA should have a facilitator and recorder. The role of the facilitator is to stimulate and moderate the discussion, with the objective of encouraging all participants to speak and exchange their views and knowledge. The facilitator should politely try to prevent anyone from dominating the discussion. The facilitator should not promote one side of an issue. The facilitator should be a neutral mediator between two or more opinions, and if possible, attempt to help the discussants to find a compromise.

The facilitator is not a teacher or an extension agent. The facilitator should be only semi-active during the discussion and should not talk too much and dominate the discussion. When the discussion slows down too much, the facilitator should help stimulate further discussion. When the discussion goes off in a direction that is irrelevant to the main topic, the facilitator should politely bring the discussion back to the main topic. But the facilitator should not speed through the discussion sub-topics. He or she should go slow enough to encourage all to speak and for all aspects of each topic to get discussed. The facilitator should help the discussion to reach the objective of the PRA, which is to have a clear identification of the aspirations, problems, and alternative solutions for irrigated agriculture. This will involve helping participants to prioritize their concerns and reach agreement on some key issues.

It would be ideal if the facilitator for the PRA could be a locally-respected farmer or perhaps a local school teacher. It is best if the facilitator is someone who is not socially too different from the farmers. Perhaps the FWUC Support Team or a farmer organization facilitator for the PIMD Program could provide some training to a local person who could become a facilitator for the PRA sessions. In the PRA, the facilitator should sit on the ground or other chairs with the farmers and be modest, friendly, show respect and establish trust and rapport with the farmers. Some humor is good. If it is not possible to get someone from the local community to be facilitator, then a member of the FWUC Support Team may act as facilitator.

The responsibility of the recorder is to write down on a board or large paper that can be seen by all participants, the symbols or key words that represent the main points raised by the participants. The recorder should request the facilitator or participants to clarify if there is something said that is not clear. The recorder should record the location of problems or things discussed that have specific locations within the irrigation system. The recorder should be careful to record all key conclusions, agreements, and decisions. Minority opinions should also be recorded. If possible, it may be even better to have a second person record the minutes of the PRA on paper, so that a record of the PRA can be kept by the community. Perhaps this could be done by a member of the FWUC Support Team.

How should PRA meetings be conducted?

If the FWUC Support Team is going to use a local farmer, school teacher, or other local person for the facilitator, then the Team should give some training to the local facilitator in how to function as facilitator for the PRA, including role playing exercises. Perhaps the facilitator can attend some PIMD training sessions.

At the beginning of the PRA meeting, the FWUC Support Team should explain to participants their role in the process of FWUC formation and capacity building. They should explain the purpose of the PRA, the protocol and rules for discussion, the roles of facilitator and recorder, and what outputs the farmers and the Team expect from the PRA. The Team should emphasize that the outputs should be practical actions that can be taken by the farmers as a group. They should be selected according to the preferences of the majority of farmers. And they should be actions that can be taken by and further improved upon and elaborated by the FWUC. Before the PRA session begins, the FWUC Support Team and facilitator should prepare a list of questions or topics to guide the discussion.

Arrangements should be made for participants to sit in a semi-circle around where the facilitator and recorder are located. The facilitator, recorder, and FWUC Support Team members should be seated at the same level and in the same way as the participants. The FWUC Support Team coordinator should explain that the farmers are the main speakers in the PRA and the Support Team are only resource persons and guests, although they may speak a little occasionally. Some snacks and drinks should be provided for all.

4.2 Participatory Rural Appraisal for Irrigated Agriculture

The first PRA session should be about irrigated agriculture. This session should take about one day (or two long evening sessions), or more, depending on the size and complexity of the irrigation system. In this session, farmers will discuss:

1. Problems the farmers currently face in irrigated agriculture,
2. Alternative solutions for overcoming these problems,
3. FWUC Support Team comments about current constraints and opportunities and farmer responses to them,
4. Plan for taking group action to implement the selected interim solutions (perhaps with some coordinated assistance from the FWUC Support Team, government, technical assistance agencies, and/or NGO's).

After discussing the main problems farmers are facing, the facilitator should help the participants to rank order the problems in order of priority from most important to least important. When discussing alternative solutions, the facilitator should ask participants to identify the main advantages and disadvantages of each possible solution. Then, the facilitator should ask the FWUC Support Team members to comment on their views about local constraints and opportunities for irrigated agriculture in the irrigation system. Finally, the facilitator asks participants to select which solutions they would like to try to adopt on a trial basis and prepare a simple plan for how to implement them.

Since the FWUC has not yet been established, it may be a good idea for the facilitator to encourage participants to identify solutions that are modest, interim in nature (i.e., that can be done in the immediate or near immediate future), and practical. The PRA and adoption of solutions should be an opportunity for the farmers to learn to discuss problems and work together toward solutions. This should be an exercise to build confidence among farmers and create awareness that the PIMD process is *their process* and *the FWUC will be an instrument for them to meet their own needs*. The facilitator should permit (but not encourage) participants to discuss aspects that are about irrigation management and development even though another PRA will be held about it later. This is because the farmers should not be restricted in discussing their problems and solutions in a free and holistic way.

Steps for implementing the PRA on Irrigated Agriculture

The following are suggested steps to take in implementing the PRA on Irrigated Agriculture.

1. Introduction of participants, explanation of the purpose, protocol, procedures, and expected outputs for implementing the PRA;
2. Explanation of the roles of facilitators, recorders, and the FWUC Support Team;
3. Discussion and agreement on an agenda of discussion questions or sub-topics;
4. Discussion and agreement on key outputs from the PRA (such as, a record of discussion, decisions, etc.);
5. Field visit to see the irrigation system;
6. Someone draws a simple sketch map of the irrigation system and crop area;
7. Discussion of each PRA sub-topic and identification of key agreed conclusions, decisions and possible actions to be taken (while recorder makes diagrams and lists on board, as needed);
8. Closing review and agreement about key conclusions, decisions and actions.

Regarding item 7 above, the following is a list of possible discussion questions or sub-topics for the PRA on Irrigated Agriculture. As needed, the recorder or other person, can place symbols on the map of the irrigation system that represent any problems or solutions that need to have a spatial reference.

PRA topics about problems of irrigated agriculture and alternative solutions

1. Ask farmers to discuss general aspects of irrigated agriculture, including the following:
 - What are their landholding sizes?
 - What are their soils like? (texture, fertility, etc.)
 - What crops do they grow?
 - What is their crop calendar?
 - What are the different tasks of land and seed preparation and cultivation? (including who does each, by gender),
 - What kind of fertilizer and pesticides are applied and in what amounts and when? (if any)
 - Do they use hired labor? (If so, for what tasks and at what cost?),

- Do they use any credit or loans for agriculture? (If yes, What for and under what terms?),
 - Are crops marketed or used entirely for household consumption? (If marketed, how, where and at what price?)
2. Are farmers satisfied with the amount of crop production (yields) they are getting on their land? If not, what are their reasons for not being satisfied?
 3. What are the main causes of low levels of production?
 4. What are the alternative solutions to overcoming the low levels of production, including the advantages and disadvantages of each? What are temporary, interim actions that could be taken to help address this problem? What are the best solutions that could be implemented now, perhaps through coordinated group action?
 5. Are farmers satisfied with how many crops they harvest per year? If not, what are their reasons for not being satisfied?
 6. What are the main causes of having only one crop per year?
 7. What are the alternative ways whereby farmers could change from growing only one crop per year to growing two crops per year, including the advantages and disadvantages of each? What are temporary, interim actions that could be done to help address this problem? What are the best actions that could be implemented now, perhaps through coordinated group action?
 8. Are farmers satisfied with the timing or schedule of land and seed preparation, planting and harvest? If not, what are their reasons for not being satisfied?
 9. What are alternative ways to improve the timing or schedule for land preparation, planting and/or harvest, including the advantages and disadvantages of each option? What are the best actions that could be implemented now, perhaps through coordinated group action?
 10. Are farmers satisfied with the type of crop (or crops) they are currently cultivating? Would they rather be able to cultivate other crops?
 11. What other crops would farmers rather cultivate? What are the reasons they are not yet cultivating these other crops?
 12. What are the alternative solutions for overcoming the constraint of changing to other, more desirable crop types, including the advantages and disadvantages of each? What are the best actions that could be taken now, perhaps through coordinated group action?
 13. Do farmers have any problems with land rights, access to land, or owner/tenant problems? If so, what are these problems? What are the alternative solutions for overcoming these problems, including the advantages and disadvantages of each? What are the best solutions that could be implemented now, perhaps through coordinated group action?

14. What other problems with irrigated agriculture are farmers facing?
15. What are the alternative ways that might be used to overcome these problems, including advantages and disadvantages of each? What are the best solutions that could be implemented now, perhaps through coordinated group action?
16. As a group, list all problems identified in order of priority, from the most important to the least important. *(If any problems are of equal importance, give them the same number in the ranking.)*
17. For each problem, select the best temporary, interim solution (or solutions) for dealing with them.

FWUC Support Team comments on constraints and opportunities

After PRA participants finish the above discussion on problems and alternative solutions, the FWUC Support Team members should each be given the opportunity to make their comments about local problems and solutions for irrigated agriculture, as discussed above. FWUC Support Team members may also discuss technical aspects of the problems or possible opportunities for provision of support services to the FWUC, after its formation, to help in finding solutions to the problems discussed. After each FWUC Support Team member makes their comments, the facilitator should give PRA participants the opportunity to ask questions or make comments. The facilitator then asks the PRA participants if they would like to make any changes in their lists of problems or selected solutions. The changes are then made by the recorder.

Agreement on simple coordinated improvements for irrigated agriculture

After the revised list of problems and solutions is agreed to by the participants, the facilitator assists the group to identify one or two simple ways whereby the farmers can make simple improvements in irrigated agriculture through agreed, coordinated action. This should include a simple plan of who does what, how, where and when.

Possible outputs of the PRA

The PRA on agriculture should probably produce the following kinds of analyses and outputs:

- simple sketch map of the irrigation system,
- a simple time-line diagram showing key historical events of the area,
- a “transect” sketch map showing different types of agricultural or environmental zones within or near the irrigation system,
- simple time-line 12-month calendars that show patterns in climate, levels of water demands and availability, crop status, labor requirements, prices, etc.,
- three bar diagrams, showing sources of income for farmers with relatively large landholdings, farmers with medium or small holdings, and farmer workers who do not own any land,

- a simple flow diagram showing types and costs of inputs for farming and how crop production is used after harvest and what benefits and income are obtained,
- statement of agricultural objectives,
- prioritized list of key problems for irrigated agriculture,
- prioritized list of alternative solutions for overcoming problems in irrigated agriculture,
- action plan for interim solutions for addressing these problems,
- written record of key conclusions and decisions of the PRA.

4.3 Participatory Rural Appraisal for Irrigation System Management and Development

The second PRA session focuses on irrigation management and development, which is a key means to achieving the agricultural objectives of farmers. In this PRA session, farmers identify key problems and constraints of irrigation system management, irrigation service objectives and preferred options to improve the irrigation service, either through improvements in management or in repair or development of irrigation system infrastructure. The FWUC Support Team helps farmer representatives who are involved in the PRA to develop a simple, preliminary Irrigation Service Plan, based on the new objectives identified for agriculture and irrigation.

This session should take about one day (or two long evening sessions), or more, depending on the size and complexity of the irrigation system. In this session, farmers will discuss:

1. Problems the farmers currently face in irrigation management and development,
2. Alternative solutions for overcoming these problems,
3. FWUC Support Team comments about current constraints and opportunities and farmer responses to their comments,
4. Plan for taking group action to implement the selected interim solutions (perhaps with some coordinated assistance from the FWUC Support Team, government, technical assistance agencies/or NGO's).

After discussing the main problems farmers are facing, the facilitator should help the participants to rank order the problems identified in order of priority from most important to least important. When discussing alternative solutions, the facilitator should ask participants to identify the main advantages and disadvantages of each possible solution. Then, the facilitator should ask the FWUC Support Team members to comment on their views about local constraints and opportunities for management and development of their irrigation systems. Finally, the facilitator asks participants to select which solutions they would like to try to adopt on a trial basis and prepare a simple plan for how to implement them. This should be formulated as a simple Irrigation Service Plan, with objectives and procedures for water delivery, maintenance, resource mobilization and administrative/supervisory functions.

Since the FWUC has not yet been established, it may be a good idea for the facilitator to encourage participants to identify solutions that are modest, interim in nature (i.e., that can be done in the immediate or near immediate future), and

practical. The PRA and adoption of solutions should be an opportunity for the farmers to learn to discuss problems and work together toward solutions. This should be an exercise that builds confidence among farmers and create awareness that the PIMD process is *their process* and *the FWUC will be an instrument for them to meet their own needs*.

Steps for implementing the PRA

The following are suggested steps to take in implementing the PRA on Irrigation System Management and Development.

1. Introduction of participants, explanation of the purpose, protocol, procedures, and expected outputs for implementing the PRA;
2. Explanation of the roles of facilitators, recorders, and the FWUC Support Team;
3. Discussion and agreement on an agenda of discussion questions or sub-topics;
4. Discussion and agreement on key outputs from the PRA (such as, a record of discussion, decisions, etc.);
5. Walk through of the irrigation system;
6. Someone draws a simple sketch map of the irrigation system and crop area (or presents the one made in the previous PRA on Irrigated Agriculture);
7. Discussion of each PRA sub-topic and identification of key agreed conclusions, decisions and possible actions to be taken (while recorder makes diagrams and lists on board, as needed);
8. Closing review and agreement about key conclusions, decisions and actions.

Regarding item 7 above, the following is a list of possible discussion questions or sub-topics for the PRA on Irrigation System Management and Development. As needed, the recorder or other person can place symbols on the map of the irrigation system that represent any problems or solutions that need to have a spatial reference.

PRA topics about problems of irrigation system management and development and alternative solutions

1. Ask PRA participants to describe general aspects of their irrigation system, such as the following:
 - Nature and condition of the headworks;
 - Alternative water sources and how they are accessed;
 - Nature, condition, and extent of canals, water control, and measurement structures;
 - Area irrigated in rainy and dry season;
 - How water is conveyed (through canals or field-to-field at what levels, etc.);

- How water is distributed between channels and farms;
- How water is applied on farm;
- How excess water is drained;
- Who performs what water delivery and drainage tasks at different levels?;
- Who performs what maintenance tasks and when;
- How money, labor or materials are raised from the members in order to manage or develop the irrigation system;
- Is there an existing local organization that coordinates irrigation system management?;
- How are decisions made, communicated and implemented?;
- What is the role of the Department of Irrigated Agriculture, or other government agencies, in the management or development of this irrigation system?

2. Are farmers satisfied with the adequacy of the amount of water that is delivered to their farms? If not, what are their reasons for their not being satisfied? At what times of the year does water become too little and in what locations of the irrigation system does this happen the most?

3. What are the main causes of inadequate water deliveries?

4. Are farmers satisfied with the timeliness and reliability of water delivery to their fields? If not, what are the reasons some are not satisfied?

5. What are the main causes of untimely or unreliable water delivery?

6. What are the alternative improvements that might be made to overcome these problems of inadequate, untimely or unreliable delivery of water in the irrigation system? What are the main advantages and disadvantages of each option? What are the best improvements that could be practically implemented now, perhaps through coordinated group action?

7. Are farmers satisfied with the capacity of the irrigation system to drain excessive water from their fields? If not, what are their reasons for not being satisfied?

8. What are the main causes of flooding or poor drainage?

9. Are there any practical options for trying to overcome or reduce the problems of flooding or poor drainage (including changing the crop calendar)? What are the advantages and disadvantages of each option? What are the best actions that could be practically taken now, perhaps through coordinated group action?

10. Are farmers satisfied with the functional condition of the intake, canals and water control structures in the irrigation system? If not, what are their reasons for not being satisfied?

11. What are the main causes of the poor condition of the irrigation system?

12. What are the alternatives for overcoming the poor condition of the irrigation system? What are the advantages and disadvantages of each option? What are the best actions that could be taken now to address this problem, perhaps through coordinated group action?

13. Are there any major repairs or improvements that need to be made in the irrigation system? What are these? Who should design, construct, and pay for these? Are the farmers prepared to contribute something toward these improvements (such as labor, materials, cash or a share of the harvest)?

14. Is enough money, labor or materials being spent on the irrigation system for maintenance and repairs? If not, what is the reason for this?

15. Are there any ways whereby farmers, the government or others could be motivated to invest more money or labor toward maintenance, operation or improvement of the irrigation system? What are the advantages and disadvantages of each option? What can and should be done practically in the near future to help raise more money or labor for irrigation system management and development, perhaps through coordinated group action of farmers and/or with assistance from the government?

16. Are there any new rules and sanctions that should be agreed to by farmers to improve the management of the irrigation system?

17. Is there a need to create a Farmer Water Users' Community? If so, what are the advantages of it?

18. As a group, list all problems identified in order of priority, from the most important to the least important. (*If any problems are of equal importance, give them the same number in the ranking.*)

19. For each problem, select the best temporary, interim solution (or solutions) for dealing with them that are practical and acceptable to all farmers.

FWUC Support Team comments on constraints and opportunities

After PRA participants finish the above discussion on problems and alternative solutions, the FWUC Support Team members should each be given the opportunity to make their comments about local problems and solutions for irrigation management and development, as discussed above. FWUC Support Team members may also discuss technical aspects of the problems or possible opportunities for providing support services to the FWUC after its formation. After each FWUC Support Team member makes their comments, the facilitator should give PRA participants the opportunity to ask questions or make comments. The facilitator then asks the PRA participants if they would like to make any changes in their lists of problems or selected solutions. The changes are then made by the recorder.

Agreement on simple coordinated improvements for irrigation system management

After the revised list of problems and solutions is agreed to by the participants, the facilitator assists the group to decide on a few simple improvements that can be made in such things identified in the PRA as the crop schedule, water delivery, drainage, system maintenance, etc. This should include how they will be implemented, by whom, where and when.

Possible outputs of the PRA

This PRA session may include the following kinds of analyses and outputs:

- Walk-through of the irrigation system and preparation of a sketch map indicating the different canals (and how long they are) and types of structures;
- Diagram of simple pictures of different types of irrigation structures in the system, with a symbol indicating whether the structure is functional, partly functional or completely dysfunctional;
- Simple pie chart showing proportional sizes of different irrigation management costs;
- “Transect” diagram showing the different types of zones in the system for water availability in dry and wet seasons;
- Seasonal diagram showing when certain irrigation activities are done (such as maintenance and repair activities, start and ending of irrigation season, water delivery and drainage schedule, etc.);
- Sketch map showing which fields have water shortage problems in the dry season, which have waterlogging or flooding problems in the wet season;
- Prioritized list of irrigation-related constraints;
- Statement of irrigation service objectives;
- Prioritized list of options for innovation in irrigation system management, showing advantages and disadvantages or relative costs and benefits of each option.

The two PRA’s are designed to create awareness among farmers about their problems and enable them to think about them in an analytical way, at the social level. They should also enable farmers to identify some simple interim improvements that can be made in irrigated agriculture and/or irrigation system management if they work together collectively. It is hoped that PRA’s will create awareness among farmers about new opportunities and benefits that can be gained by them through establishment and successful functioning of a Farmer Water Users Community.

This is useful preparation for building capacity among farmers, though still in the form of an informal group, to collectively define their irrigation service objectives and prepare and adopt, through negotiation and consensus building, an Irrigation Service Plan.

5. *What is an Irrigation Service Plan?*

The management of an irrigation and drainage system can be divided into the provision of two primary services and two key supporting services. The two primary services are water delivery and drainage. The two key supporting services are maintenance and financial management.

One of the objectives of PIMD is to ensure accountability between water users, FWUC leaders and government for irrigation services. Irrigation Service Plans (ISP) are an important element in ensuring accountability for irrigation services. The ISP helps make clear what are the key objectives of the irrigation system and how the water delivery, drainage, maintenance and financial/administrative management services will ensure that the objectives are reached.

At the beginning of an ISP there should be a simple statement of what cropping pattern (defined in temporal and spatial terms) the ISP is designed to service. It should state the basic principle of water distribution that will be used and the beginning and ending dates of the irrigation season(s). It should also describe what maintenance standards will be adopted and what are the criteria for deciding what maintenance works should be done where and when.

The ISP, (like an O&M plan), specifies what irrigation and drainage services will be provided and what scheme maintenance and repair and improvement activities will be implemented. But the ISP also specifies how these services will be provided, who will provide them, at what cost and how they will be paid. Normally, the ISP is for one year.

The following is a list of possible contents of an Irrigation Service Plan.

1. Description of the irrigation service objectives, standards and criteria. This includes a description, temporally and spatially, of the desired cropping pattern within the irrigation system and what kind of water distribution and delivery will be arranged to meet the desired irrigation requirements.
2. Service specifications for water delivery and drainage
 - Location points to which water will be delivered
 - Water distribution method (including basis for allocation, priority and ordering system)
 - Water delivery schedule (including dates, rate, duration and frequency of delivery)
 - Water quality requirements (such as maximum allowable silt load, contaminants, etc.)
3. Service specifications for maintenance
 - Minimum allowable condition for each type of structure
 - Location, type and extent of canal cleaning to be done
 - Volume of silt to be removed

- Locations, type and extent of repair work to be done
- Greasing, painting and other maintenance requirements for control and measurement structures

4. Obligations for cost sharing

- Basis for assigning costs to individual members of the FWUC
- Number of days of labor to be contributed by FWUC members
- Volume of materials to be contributed by FWUC members (such as sand, stones, brush)
- Payments to be made by FWUC members (such as cash or share of the harvest)
- Type and number of FWUC staff assigned to what functions and locations
- Amount of MOWRAM budget to be allocated to the scheme (if any)

5. Administrative obligations

- Monitoring and reporting requirements
- Bookkeeping and meeting record keeping requirements
- Democratic procedures for decision making by the FWUC
- Dispute resolution requirements
- Schedule and tasks for Irrigation Management Audits

Components of the Irrigation Service Plan which are to be implemented by third parties (such as private sector contractors) should have written Irrigation Service Agreements made up between the FWUC and the contractor. These specify obligations of both parties.

Worksheet 1 in the Annex below provides an example of a simple form that could be used to prepare the summary sheet of an Irrigation Service Plan.

6. *Water Delivery and Drainage*

6.1 Main tasks

Management responsibility for an irrigation or drainage system consists essentially of the activities associated with the following:

- Control of water,
- Movement of water from the source of supply to its point of use in the proper, amount at the proper time,
- Disposal of water after it has served its purpose, and
- Reuse, where possible.

A basic requirement for the management of an irrigation system is that the operation be administered according to the rules laid out for the system so as to provide the maximum possible benefit from the system. Water delivery and drainage regulations and instructions which assure adequate water distribution and removal, as well as safe, economical, beneficial, and equitable use of water supplies and optimum

water conservation should be adopted and enforced by the FWUC. These regulations also must be revised from time to time, as circumstances require.

Certain routine objectives are necessary for operating an irrigation system. They are:

1. Provide adequate and equitable distribution of water in quantities sufficient to satisfy crop requirements;
2. Provide reliable and timely deliveries of water to the water users in accordance with the agreed irrigation service plan;
3. Conserve the water supply; and
4. Provide adequate drainage where this is necessary.

To accomplish this, the day-to-day management requires that the water inflow, the water reserves in the system, and the water demands by the user be known, and that the needs be compared against supplies on a daily, weekly or monthly basis. In complex systems, it is preferable to have volumetric measurement and control of water flow. In small simple systems, it may be sufficient to measure water in fields and canals in qualitative ways, based on experience.

Tasks which require close supervision and coordination include:

1. Maintaining desired flow in the system to meet the demands;
2. Keeping the level of water in the canals and laterals near constant flows so that uninterrupted delivery can be made when needed;
3. Rotating water between fields or channels when needed due to water shortages or special agreed delivery schedules;
4. Maintaining optimum flows in the canals, laterals, and drains so that bank scouring and sloughing can be avoided; and
5. Controlling excess water so that it can be properly removed and handled.

6.2 Preparing the water delivery and drainage plan

Preparing the water delivery and drainage component of the ISP includes specifying to what locations water will be delivered and closed off at what periods of time. This should be related to locations and areas of crops, by type. Where water flow measurement and control devices exist, the water delivery and drainage plan can also include planned discharges. Adding another column for recording actual discharges can make the form useful for both planning and monitoring.

However, in many irrigation systems in Cambodia the irrigation systems will not have functional water measurement devices. In this case, it may be sufficient to just record whether water is scheduled to be delivered to a certain canal or block or not, at a certain period of time.

Worksheets 2 and 3 in the Annex below are examples of forms that could be used to prepare water delivery and drainage plans, as sub-components of the Irrigation Service Plan.

7. *Maintenance*

7.1 **Causes and consequences of damage and deterioration of the irrigation system**

The following are the most common cause of damage and deterioration:

1. Siltation in the channels,
2. Growth of weeds and other vegetation in the bed and sides of channels,
3. Collapse of structures,
4. Breaches of embankments due to erosion,
5. Unauthorized cuts for diverting flows,
6. Movement of cattle, carts, tractors, etc., across the minors, channels etc.

The following are the most common effects of damages and deterioration of irrigation infrastructures:

1. Carrying capacity of the system gets reduced,
2. Drop in the head of water flow - resulting in lesser withdrawals into the outlets,
3. No flows to the tail reaches,
4. Reduction in the command area,
5. Delayed irrigation – poor crop growth,
6. Inundation of fields because of impeded drainage, and
7. Lower or depressed crop yields due to inadequate irrigation and/or drainage.

7.2 **Principles of maintenance**

An irrigation system is intended to deliver a planned quantity of water to each designated outlet according to agreed time schedule. This can be achieved only if the irrigation system is in good functional condition. But all irrigation systems are subject to deterioration and damage through normal use.

Maintenance is a supporting service to keep the system in an optimum working condition. Maintenance services ensure an agreed level of operational efficiency of hydraulic structures in conformity with its designed performance, on a sustained basis.

The maintenance service ensures the following:

- Water delivery and drainage services will be reliable and predictable;
- Acceptable level of utility of the system;
- Efficiency in cost of water delivery and drainage services; and
- Sustainability of the system in functional condition in the long run.

There are four principles, which deserve attention in maintenance. They are:

1. **Be on time:** Maintenance should be carried out on time. In many cases the system quickly deteriorates if maintenance is postponed.

2. **Tackle the cause for damage or deterioration:** The causes for the damages or deterioration should be identified early in order to provide effective maintenance. Superficial repair may look sufficient but will not be adequate. Hence, the main causes of damage and deterioration should be identified and solved through group consensus in the FWUC.
3. **Preparedness:** Preparation is always necessary for maintenance. This includes walk-through surveys to identify the problem areas, develop the plan of work, mobilize labor and materials, etc.
4. **Resources:** Mobilization of resources to attend to maintenance activity is essential in small-scale irrigation systems, or at tertiary and secondary canal levels.

7.3 Types of maintenance

Maintenance activities can be classified into two categories:

- Routine maintenance and
- Incidental repairs and improvements.

Routine maintenance

Routine maintenance activities are repetitive in nature, which are required to be done each year or season. These are:

- Desilting,
- Weed removal,
- Minor embankment strengthening,
- Emergent breach-closing works,
- Clearing and oiling of shutters,
- Painting of hoists and gates,
- Cleaning of inspection paths.

Incidental repairs and improvements

Some of these are:

- Minor repair or reconstruction of sluice gates, shutters, and other regulators,
- Minor repair or reconstruction of drops and other masonry structures,
- Minor repair or reconstruction of measuring devices,
- More substantial strengthening of embankments,
- Minor canal lining works.

Inadequate routine maintenance (which is often referred to as “deferred maintenance”) results in higher requirements for incidental repairs and improvements. Inadequate repairs and improvements results later in higher costs for repairs and improvements, and perhaps eventually the need for major rehabilitation.

7.4 Steps in preparing and implementing the maintenance component of the Irrigation Service Plan

The process of maintenance involves six basic steps:

1. Identify maintenance requirements,
2. Prioritize and select maintenance works,
3. Estimate resources required,
4. Finalize maintenance service plan,
5. Implementation and supervision,
6. Record maintenance works implemented.

Worksheet 4 in the Annex below is an example of a simple form that could be used to prepare the maintenance component of the ISP.

Step 1: Identify maintenance requirements

A walk-through survey is a joint inspection of the system in which both the managing committee members of the FWUC and the staff of the Department of Irrigated Agriculture walk along the system to study the present condition of the system in order to identify the maintenance works required to be carried out and their location.

Details that are normally observed during the walk-through survey are:

1. Status of canal – siltation and vegetation, location and extent of problems.
2. Status of flows reaching different points along the canals. A few locations along the length of the system at suitable intervals should be compared between the existing section and design.
3. Damages to embankments and their location.
4. Leakage points where water is wasted.
5. Damaged structures and their location.
6. Unauthorized cuts and openings along the system.
7. Condition of the measuring devices.
8. Damages to canal lining (if any), and
9. Siltation, vegetation, erosion or slides, etc. in the drainage network.

These are best noted in a list on sheets of paper, with notations that refer to locations on a simple sketch map of the system. See Figure 1 as an example of such a sketch map.

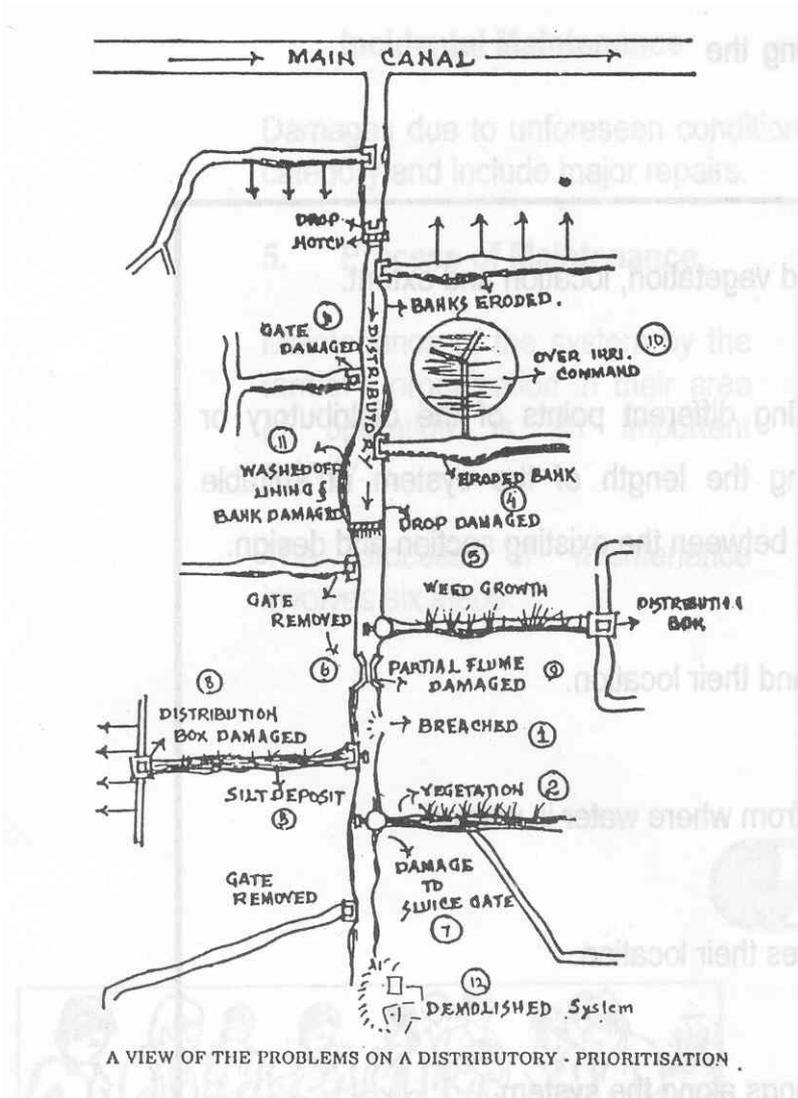


Figure 1. Problems recorded during walk-through survey

Step 2: Prioritize and select maintenance works

Prioritization of works becomes necessary due to the limitation of time and resources for implementing maintenance works. In view of this there is a need to categorize the works in order of priority of importance. Maintenance is often done during the closure period, which is generally limited to few weeks. Within this limited time, what is possible and what is essential are to be decided in meetings of the FWUC.

The various items are to be carefully assessed and a prioritization is to be made.

An illustrative list of prioritization:

1. Filling up breaches
2. Weeding / removal of vegetation

3. Removal of silt
4. Strengthening of banks
5. Repairs to drop structures
6. Fix / repair outlets
7. Replacement of sluice gates
8. Repair distribution boxes.

Step 3: Estimate resources required

All maintenance work needs funds, labor, materials and skills. Funds can be obtained either from internal sources of the organization, such as fees from members, contributions, etc. or from external sources such as government grants, loans, etc.

Based on the overall availability of funds or other resources, a maintenance service plan should be prepared by FWUC leaders and agreed by FWUC members in an open meeting. As a first step, the tentative cost for each item or activity should be made including cash, labor, materials and skill requirements.

The Managing Committee of the FWUC should prepare and discuss the list and make any adjustments needed in priorities. This is to be discussed and approved by the general members of the FWUC. The FWUC should discuss how and when the maintenance will be done, who will implement them, at what standard and under what terms and conditions.

Estimates for the works prioritized are to be prepared according to the hydraulic particulars and as per prevailing schedule rates. These are approved on provision or rules made for the purpose.

Step 4: Finalize maintenance service plan

After the FWUC has agreed on the maintenance program, the FWUC Management Committee should finalize the schedule, assignment of responsibilities and arrangements for implementation.

Step 5: Implement the maintenance plan

The maintenance service plan approved by the FWUC is then implemented. The FWUC can implement works by hiring workers, by making a contract, or by their own communal labor. It is desirable to encourage farmers to take up simple works by themselves, in order to minimize requirements for cash expenditures.

The members of the Managing Committee of the FWUC should not receive any maintenance contract or other personal rewards, except perhaps agreed compensation for their time and expenses. The cost of works executed should not exceed the previously estimated costs.

The Department of Irrigated Agriculture should ensure that designed hydraulic particulars of an irrigation system are not altered without a joint agreement. The FWUC Support Team should guide the FWUC in supervising works during

maintenance, and where government funds are used, in recording the pre-measurements and final measurements for qualifying the works done for making payments by the FWUC. The FWUC Management Committee should assign one or more of its member to supervise maintenance works. The progress of work should be reviewed almost on a day to day basis.

The list of works to be taken up should be given wide publicity in meetings and by means of display on a board of the FWUC and other public places and institutions within the area so that there is regular monitoring by the farmers themselves. No works should be done without prior agreement of the members.

Step 6: Keep a record of works done

The FWUC Management Committee should assign one or more of its member to keep a record of dates, times, names of people, material used, works done, and expenses made in implementing the maintenance plan.

8. Rehabilitation, Upgrading, and Extension

In contrast to maintenance, rehabilitation, upgrading and scheme extension are occasional investments in the restoration or development of the physical assets of the system. These are major capital investment works that are done to restore the system to a previous standard; to improve the system's conveyance, drainage, or control capacity; or to extend the canal network in order to enlarge the service area or change the cropping pattern. Examples of these works are:

- Canal lining,
- Reconstructing or improving outlets and gates,
- Constructing new or extra outlets,
- Constructing additional hydraulic structures,
- Enlarging, lengthening, or adding canals.

These may be required because of deferred maintenance over the years or because of natural disasters, such as flooding or landslides. If funds are available, the government may provide financial and technical assistance for rehabilitation, upgrading or extension. Internationally, there is a recent trend for governments and donors to require water users associations to share the cost of rehabilitation, upgrading, or extension. This may be done through farmer contributions in labor, local materials, or cash.

9. Financial Management

Cambodia's irrigation systems are, in general, small in scale. Most are less than 150 ha. They serve mostly smallholders with farms less than 2 ha, who mainly cultivate rice for household consumption. Yields are low, partly because of low soil fertility in many areas and low usage of fertilizer. There is little flow of cash through the rural farm economy. Many schemes have no water measurement structures at all and infrastructure is normally very simple and often in a deteriorated condition. Banks are not available in many provinces. Farm labor is often paid in kind. Literacy in rural

areas is rare. Under these conditions, resources required for irrigation system management may--in many areas--only be available in the form of labor, local materials and a share of the harvest.

9.1 Estimating resources required

The first step in preparing an estimate of what resources are required is to prepare a draft Irrigation Service Plan (ISP). Once this is prepared, the FWUC Management Committee (MC) must estimate what resources will be required to implement it. The MC should decide, for the water delivery and drainage component, whether to use special personnel to distribute the water from the intake to farms or whether the farmers themselves can organize water distribution by their own volunteer, unpaid efforts. If special personnel are employed, the Management Committee must decide in what form their compensation should be (in cash, in a share of the harvest, access to land or other communal resources, etc.), how much it will be, and when it will be paid. If water distribution is to be done by the farmers themselves, then the rules must be very simple and clear to all.

For the maintenance component of the ISP, the MC must decide which activities will be done with unpaid group labor, with paid specialty labor, and/or with machinery. The MC must decide how any specialty labor will be paid, whether in cash, in kind (such as a share of the harvest), or by other means. The MC should then make a single list of all resource requirements for all ISP activities. This should show how much cash, labor, materials, and in-kind payments or other forms of remuneration will be provided. This estimate of resources required should be an essential part of the ISP and should be presented by the MC to FWUC members for approval or adjustment.

Worksheet 5 in the Annex below provides an example of a form that may be useful in preparing a financial management plan for the ISP.

9.2 Mobilizing and allocating resources

In a meeting of the FWUC, the MC and FWUC members should discuss and decide how, where, when and by whom the resources required for implementing the ISP will be mobilized. The FWUC should make arrangements to mobilize all necessary resources (whether cash, labor, or whatever) on a schedule that will enable timely implementation of desired water delivery, drainage, and maintenance services. If the FWUC decides to collect cash or in-kind payments (such as an amount of rice per ha) from its members, then it will need to decide how much will be collected per member or per unit of land and how it will be collected, stored and used. The amount to be collected should be enough to pay the costs expected. In the future, especially as the economic productivity of irrigated agriculture improves and farmers get access to banks, the FWUC may want to collect an extra amount to be used as a capital reserve fund for larger repairs and improvements.

9.3 Supervising and recording use of resources

Misuse of funds or failure of FWUC members to contribute their labor to maintenance activities can be major risks to the viability of the organization. It is very

important that the FWUC MC keep a careful and complete record of all resources mobilized by the FWUC, whether cash, in-kind payments, labor, materials, or whatever. The MC should also keep careful records of all expenditures made, including payments for labor or materials, labor contributions by members for maintenance work, etc.

Only members of the FWUC Management Committee should make payments for works done. It is best if this is done only when there are at least two members of the MC present. The FWUC Management Committee should keep a receipt for each expenditure made. The FWUC should keep these records in a Resource Management Record book that is kept in a safe place. It would be good to have two copies of the record, kept in two locations.

9.4 Advantages of a bank account

If and when banks are available to the FWUC at a reasonable distance, and when cash starts to become a more important medium of exchange for the FWUC, it will be a good idea for the FWUC to open a bank account. There are several advantages for the FWUC to have a bank account. It provides an independent source of control and information about what is happening to the funds. It provides a stable and secure location to store the funds before they are used. Funds for a capital reserve can be stored long-term in the bank. Banks can also act as a mediator, witness or notary for signing of contracts, financial transactions, and procurement of materials and equipment. They can also help the FWUC to establish a credit rating.

10. The Irrigation Management Audit

Periodically (probably once a year), the FWUC Support Team, together with members of the FWUC, should conduct a management audit of the FWUC. This should include examination of:

1. The FWUC's Irrigation Service Plan,
2. Implementation of the service plan (including water delivery and drainage, maintenance and financing),
3. FWUC records for maintenance and resource mobilization and use,
4. Walk-through to inspect quality of maintenance works and functional condition of the system, and
5. Interviews with farmers to determine whether the FWUC Management Committee is following democratic procedures and its own rules and whether the FWUC Management Committee still has the support of its members.

11. Suggested Group Exercises

Exercise 1: Reporting

The trainer assigns two participants to share the task of being reporters for Module 4, Session 1. They will make a summary written report of the main points identified in the lectures and participatory exercises. They should prepare their report within one day after Session 1 is completed.

Exercises 2 & 3: PRA's on Irrigated Agriculture and Irrigation System Management

The PRA on Irrigated Agriculture and PRA on Irrigation System Management are important capacity building field exercises for the FWUC Support Teams and farmers. They should be implemented, as instructed above, as an inherent part of this Module.

Exercise 4: Revise Irrigation Service Plan Worksheets

The participants divide into three groups to examine the preliminary examples of worksheets for the water delivery and drainage, maintenance, and resource management components of the Irrigation Service Plan. Each group sees whether improvements can be made in the worksheets. Also, participants may want to design different kinds of worksheets that may be needed for different kinds of irrigation systems (such as, systems with and without water measurement structures, systems irrigating rice versus non-rice crops, etc.). Each revised worksheet should be reviewed and finalized by the entire group of participants. Then, they should finalize a single form for recording all key decision items for the Irrigation Service Plan.

Exercise 5: Field visit to prepare demonstration Irrigation Service Plans

Participants divide into groups of not more than 7-8 persons. Each group visits an irrigation system and meets with farmer representatives. Together, they do a walk-through of the system and, in discussions with farmers, the farmers work with them to prepare a draft demonstration Irrigation Service Plan.

The groups fill in their worksheets and the Irrigation Service Plan form, then return to the training classroom and make presentations of their respective Irrigation Service Plans before all participants. These are then critically reviewed by participants, who try to make suggestions for improvements.

It should be emphasized that this is only a learning exercise and the draft Plan should not be seen as a binding agreement. Also, in the preparation of a real Irrigation Service Plan, farmers take the lead role, the Plan must be approved by the FWUC members, and the FWUC Support Team only acts as facilitators.

Exercise 6: Review

Step 1: At the end of Module 4, Session 1, the trainer asks participants to mention what they thought were the most important points learned in the Session.

Step 2: The reporters read their summary of Session 1.

Step 3: The trainer asks participants if any corrections or additions should be made to the report and suggestions are made, if any

Step 4: The reporters note the suggestions and revise the report for Module 4, Session 1, as needed.

12. Summary of Module 4, Session 1

Reporters make a presentation to the participants of key points raised in Session 1 lectures, discussions, and exercises. This is followed by a short period of comments, questions and answers wherein corrections and additions may be made in the record of the Session.

End of Module 4, Session 1

Session 2: Working Group Assignment

This assignment should be done by each FWUC Support Team.

Task 1: Each FWUC Support Team selects one of the irrigation systems, or sub-systems, that they are working in to develop an FWUC. They make arrangements for how they are going to assist the farmer representatives to develop a draft Irrigation Service Plan.

Task 2: Each FWUC Support Team conducts a walk-through of the system with the farmer representatives and holds discussions about what is the purpose for, and contents of, an Irrigation Service Plan.

Task 3: Each FWUC Support Team helps the farmer representatives to prepare a draft Irrigation Service Plan, using the worksheets that were finalized in the classroom training group exercise. The Plan should be considered reasonable, practical, and acceptable to the farmers, rather than one that is too elaborate or expensive for the farmers.

Task 4: Each FWUC Support Team prepares final copies of the worksheets and fills in the draft Irrigation Service Plan form.

Task 5: Each FWUC Support Team presents the results of the assignment at the beginning of the next classroom training, which is Module 5, Session 1.

Annex: Worksheets for Preparing an Irrigation Service Plan

Worksheet 1: Irrigation Service Plan - Summary Sheet

Name of the project:

Command area:

Number of canals:

Total length of the canals:

Design flow:

Method of water distribution:

Total number of farmers:

Name of the FWUC President:

Name of recorder:

Summary plan for year: Season:

1. Data on area

Canal No.	Area planned	Area actually irrigated	Rice area	Other crop's area
1				
2				
3				
4				
5				
6				

2. Data on water delivery and drainage

Canal No.	Irrigation canal		Drainage canal	
	Operation period	Volume supplied	Operation period	Volume drained
1				
2				
3				
4				
5				
6				

3. Maintenance and finance

	Materials	Crops	Labor	Cash	Total*
Income					
Expenses					
Balance					

Note: * Considering the market price of materials, crops and labor

Worksheet 2: Irrigation Service Plan – Irrigation Schedule

Name of the project:

Name of the canal:

Year: Season:

Name of canal	Name of the supervisor	Canal operation					Estimated volume supplied	Area irrigated			Total area under cultivation	Status of water application*
		Opening		Closing		Time of operation		Crop 1	Crop 2	Crop 3		
		Date	Time	Date	Time							
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Note: * Full/partial

Worksheet 3: Irrigation Service Plan – Drainage Schedule

Name of the project:

Name of the canal:

Year: Season:

Name of drainage canal	Name of the supervisor	Canal operation					Estimated volume drained	Area drained			Total area under cultivation	Status of water drainage*
		Opening		Closing		Time of Operation		Crop 1	Crop 2	Crop 3		
		Date	Time	Date	Time							
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Note: * Fully drained / partially drained

Worksheet 4: Irrigation Service Plan - Maintenance Plan

Name of the project:

Name of the canal:

Year: Season:

Activities	Resources required		Resources available		Additional requirements		Source of fund ^{&}	Status of the work [*]	Date of completion	Name of Supervisor
	Materials [#]	Labor [%]	Materials	Labor	Materials	Labor				
Routine Maintenance										
1. Removal of silt										
2. Removal of vegetation										
3. Removal of silt										
4. Minor embankment strengthening										
5. Clearing and oiling of shutters										
6. Painting of hoist and gates										
7. Cleaning of inspection path										
Incidental Repair										
8. Construction of new structures										
9. Enlarging or adding canal										
10. Major embankment strengthening										

Note: ^{*} Deferred / On-going / completed,

[#] List the materials with amount required or total cost of purchasing of these materials

[%] Man-day, that means the sum of the number of labor required in each day,

[&] Source of fund to buy additional materials and to hire labor

Worksheet 5: Irrigation Service Plan – Financial Record

Name of the project:

Name of the canal:

Year: Season:

Canal No.	Name of supervisor	Income					Expenditure					Balance
		Materials	Crops	Labor	Cash	Total ¹	Materials	Crops	Labor	Cash	Total	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Note: ¹: Total considering the market price of materials, crops and labor.