

SECOND REGIONAL IRRIGATION MANAGEMENT WORKSHOP KATHMANDU, NEPAL

24-29 April 1988

ISPAN ACTIVITY NO. 609A

ISPAN REPORT NO. 7

ISPAN

IRRIGATION SUPPORT PROJECT FOR ASIA AND THE NEAR EAST

Sponsored by the U.S. Agency for International Development

ISPAN

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ISPAN Report No. 7

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KATHMANDU, NEPAL

24-29 APRIL 1988

Prepared for the Asia and Near East Bureau,
U.S. Agency for International Development
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Prepared by
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FOREWORD

This report documents the Asia/Near East Regional Irrigation Management Workshop carried out in Kathmandu, Nepal, in April 1988 by ISPAN with the sponsorship of the Department of Irrigation of His Majesty's Government's Ministry of Water Resources. The ANE Bureau's first Regional Irrigation Management Workshop, held in Karachi, Pakistan, in January 1987, was the first professional gathering of A.I.D. irrigation officers and their counterparts. Participants at the Karachi workshop expressed the strong desire to make this an annual event, thus ANE/TR/ARD requested ISPAN to assume responsibility for the task.

ISPAN and ANE/TR/ARD see the regional workshops as important investments in A.I.D.'s present and future operations in the irrigation sector. They offer the opportunity to strengthen the professional quality of the Agency's human resources, as well as to provide a forum for synergistic interchange among ANE staff, and between A.I.D. staff and professionals in the private and public sector, with whom they work.

This first ISPAN Regional Workshop in Kathmandu firmly established the tradition initiated in Karachi of drawing together ANE irrigation professionals and their counterparts to foster professional exchange and explore issues of common concern. In addition, the workshop provided an opportunity for ISPAN contract staff to discuss their emerging program with clients in the region.

The ISPAN workshop was an extremely fruitful undertaking. The event was characterized by broad participation and very substantial discussions, coupled with an excellent field trip which highlighted the issues under discussion. Participants came from ten countries which fall under the purview of the ANE Bureau, representing A.I.D. Missions, counterpart agencies and technical assistance staff. In addition, three institutions from the region were represented: the International Irrigation Management Institute (IIMI) in Sri Lanka; Central Luzon State University in the Philippines; and the Institut Agronomique et Veterinaire Hassan II in Morocco.

ISPAN staff can take great pride in the success of the workshop, from the high quality of overall organization and discussion sessions to the richness of after-hours gatherings. Likewise, USAID/Nepal and HMG's Department of Irrigation deserve strong commendation for their tireless efforts in making the workshop such a success. Dr. Jon Breslar and his staff, USAID/Nepal, made local arrangements and orchestrated logistics, in collaboration with Mr. Binod Aryal, Director of the Irrigation Management Project (IMP), and his staff. Their energetic, meticulous efforts were

invaluable. Moreover, their enthusiasm generated an exceptionally high level of involvement of their colleagues from IMP and the Department of Irrigation in all workshop sessions, including the participation of the Honorable Minister of Water Resources, Dr. Yadev Prasad Pant, who inaugurated the workshop.

Drs. Prachanda Pradhan, Upendra Gautam, and Bob Yoder of IIMI and IMP arranged an excellent field trip to the Gadkhar Irrigation Scheme in Chaughada Village Panchayat. The trip provided very useful discussions with water users and officials, as well as an unforgettable, unseasonably clear morning view of majestic Ganesh Himal.

Finally, thanks go to Major T. S. Chhetri, Administrative Officer of the IMP technical assistance team, who managed pre-workshop logistics and finances for ISPAN, and to Ram Thapa, USAID/Nepal, who performed innumerable services before, during, and after the workshop.

N. S. Peabody, III
Senior Water Management Specialist
ANE/TR/ARD

ACRONYMS

AID	US Agency for International Development (Washington)
ANE	Asia and Near East Bureau, US Agency for International Development
TSC	Technical Support Center, ISPAN
ISPAN	Irrigation Support Project for Asia and the Near East
ADO	Agricultural Development Officers
IIMI	International Irrigation Management Institute
NIA	(Philippine) National Irrigation Administration
RID	Royal Irrigation Department, Thailand
USAID	Overseas AID Missions

EXECUTIVE SUMMARY

The Asia and Near East (ANE) Bureau of the U.S. Agency for International Development (AID) in 1987 organized a regional irrigation management workshop in Karachi, Pakistan, bringing together USAID personnel and host country officials. In 1988, the Bureau requested ISPAN to assist in preparing and coordinating a follow-up meeting. The Second Asia and Near East Regional Irrigation Management Workshop, held from 24-29 April 1988 in Kathmandu, Nepal, offered an opportunity for staff from USAID Missions, officials from counterpart agencies, and contractors from 11 countries to meet and explore issues and problems of common interest.

The overall objectives of the workshop were

- to enhance the professional development of participants by providing them with practical information on strategies to deal with institutional strengthening and cost recovery;
- to develop and strengthen linkages among professionals in the ANE Region; and
- to determine how ISPAN can best serve the needs of the USAID personnel, host government counterparts, and contractors.

High points of the workshop included:

- an overview of ISPAN;
- an inaugural ceremony led by Dr. Yadev Prasad Pant, Minister of Water Resources of His Majesty's Government of Nepal; M.D. Karki, Director General, Department of Irrigation of His Majesty's Government of Nepal; Milton Frank, United States Ambassador to Nepal; and William S. Rhodes, Acting Director, USAID/Kathmandu;
- playing the Irrigation Management Game, designed to train and sensitize irrigation staff to technical and social issues involved in irrigation management;
- a session on institutional strengthening and participation which examined the impact of public agency objectives and policies on the interaction between the agency and users, analyzed various models for sharing authority; identified common problems and inputs needed to enable agencies to work effectively with water user groups; and

- a session on cost recovery which identified cost recovery objectives and mechanisms, examined finance mechanisms and the institutional context of irrigation financing, listed cost recovery problems of Mission/country projects, and identified inputs needed to resolve cost recovery problems.

Participants' assessments of the workshop included the following:

- the workshop was an important forum for networking and the exchange of ideas;
- the presentations of conceptual frameworks for institutional development and cost recovery were very helpful as introductions to the issues;
- the workshop provided a good opportunity to learn more about ISPAN's activities;
- the field trip was useful as an efficient overview of attempts at irrigation development in Nepal;
- the Mission updates ought to have been more focused; and
- time ought to have been devoted to a session focusing specifically on issues for USAID staff.

Participants were asked to provide suggestions for the next workshop. They requested:

- more advance notice of the details of the workshop program to help the Missions select appropriate participants;
- further examination of cost recovery, drawing on the experiences of a small number of Missions and/or counterpart agencies as case studies and the development of common strategies that might be applied by USAID and counterpart agencies;
- an examination of the interrelationships among cost recovery, institutional strengthening, and farmer organizations;
- attention to the legal aspects of institutional development and cost recovery;
- results of applied studies supported by ISPAN;
- a session for USAID personnel on performance-based disbursement; and
- another one-day field trip.

Chapter 1

INTRODUCTION

The development of effective irrigation programs continues to be a concern of countries in Asia and the Near East. The region is characterized both by substantial donor and host government investment and by significant technical improvements in irrigation systems. Improvements of the physical system have led to the next generation of critical issues which are related to institutional and financial sustainability. Donors indicate that a regular exchange of ideas with host governments in the region is required to develop new and appropriate initiatives. To that end, the Asia and Near East (ANE) Bureau of the U.S. Agency for International Development (AID) in 1987 organized a regional irrigation management workshop in Karachi, Pakistan, bringing together USAID personnel and host country officials.

In 1988, the Bureau requested ISPAN to assist in preparing and coordinating a follow-up meeting. The Second Asia and Near East Regional Irrigation Management Workshop, held 24-29 April 1988 in Kathmandu, Nepal, offered an opportunity for staff from USAID Missions, counterpart agencies, and contractors from 11 countries to meet and explore two issues which are common to the region: the institutional development of irrigation agencies and cost recovery.

During the five-day workshop, participants also provided updates on the USAID-funded irrigation projects in their countries, discussed the ISPAN and IIMI programs, played the Irrigation Management Game, and visited an irrigation project site north of the Kathmandu Valley.

The overall planning of the workshop was undertaken by ISPAN's Technical Support Center in conjunction with the ANE Senior Water Management Specialist, Dr. N.S. Peabody, III.

This report summarizes the major activities of the workshop and the conclusions and recommendations of the participants.

Chapter 2

PLANNING

2.1 Workshop Objectives

The overall objectives of the workshop were

- to enhance the professional development of participants by providing them with practical information on strategies to deal with institutional strengthening for participation and cost recovery;
- to develop and strengthen linkages among professionals in the ANE Region; and
- to determine how ISPAN can best serve the needs of the USAID personnel, host government counterparts, and contractors.

2.2 Workshop Planning

Initial planning for the workshop was done by the ISPAN Technical Support Center (TSC) with the assistance of the ISPAN Project Officer. In January, telexes were sent to 16 ANE Mission Agricultural Development Officers (ADOs) informing them of the impending workshop, indicating the workshop objectives, and suggesting three topical areas which might be explored in day-long sessions:

- cost recovery policies, strategies, and experiences;
- computer applications for improved irrigation management; and
- institutional strengthening and participation and restructuring agency/farmer relationships.

Missions were requested to respond to the selection of these topical areas and indicate if the issues reflected their own priorities. They were also asked to suggest other issues for discussion. USAID/Kathmandu had already expressed a strong interest in hosting the workshop. The Missions were asked to react to Kathmandu as a workshop site.

Mission responses indicated a general interest in the topical areas and support for the proposed workshop venue. In March a second telex was sent by ISPAN to ANE Missions confirming the date and location for the workshop and requesting the names of participants.

2.3 Workshop Design

In February and March, the workshop agenda was refined. The organizers decided that two substantive issues provided sufficient focus for the meeting: cost recovery and institutional development. Dr. Les Small of Rutgers University, who had conducted an important study on cost recovery for the International Irrigation Management Institute, was invited to present a session on cost recovery.

ANE experience was made the focus of the session on institutional development. The following people were invited to make presentations: Engineer Ben Bagadion, formerly Assistant Administrator of the National Irrigation Administration (NIA), who discussed the Philippine model for institutional transformation and farmer participation; Khun Nakool Thongtawee, Director of Operation and Maintenance Division, discussed new initiatives in the Royal Irrigation Department in Thailand; and Dr. E. Walter Coward, Jr., of Cornell University, who provided a perspective on Indonesia.

2.4 Participants

ANE Mission direct hire and foreign service nationals, host government agency counterparts, and USAID contractors were invited to attend. Presenters and participants came from the following countries:

• Egypt	4
• India	4
• Indonesia	2
• Morocco	1
• Nepal	18
• Pakistan	4
• Philippines	9
• Thailand	1
• Sri Lanka	5
• Yemen	1

An additional 11 presenters and participants came from the United States and the United Kingdom.

A complete list of participants is provided in Annex A. The workshop schedule may be found in Annex B.

Chapter 3

PROCEEDINGS AND OUTCOMES

3.1 Day One

3.1.1 Opening Session

Following welcome remarks by Stan Peabody and introductions, participants were asked to express their expectations of the workshop. These included:

- sharing country experience regarding irrigation management involving donor coordination;
- learning more about host country receptivity to AID's initiatives in institutional development;
- considering mechanisms for institutional development that have been used by countries in the ANE Region;
- identifying the training requirements of countries in the ANE Region and review AID's contribution;
- learning more about ISPAN;
- learning more about International Irrigation Management Institute (IIMI);
- identifying effective methods for improving project implementation; and
- sharing experiences in cost recovery and farmer participation.

3.1.2 Mission Updates

Discussions were held on the current Mission irrigation programs in Pakistan, Indonesia, and Nepal.

3.2 Day Two

3.2.1 Mission Updates

The day began with continuation of the discussion of Mission irrigation programs in Yemen, Sri Lanka, Egypt, and the Philippines.

3.2.2 ISPAN Overview

Members of ISPAN's Technical Support Center discussed the project's activities during its initial months. Technical assistance was largely Mission-focused during this period, with a number of project designs and evaluations conducted or planned.

ISPAN had tentatively identified six priority problem areas which would serve as the foci for proposal development for the Applied Studies Program:

- inadequacies in the design process;
- inadequate and/or inappropriate participation by water users and institutions;
- inadequate resources for operation and maintenance;
- adverse impact on the physical environment;
- adverse economic impact on the poor and women; and
- unplanned conjunctive use of surface and groundwater.

The presenter also discussed Missions' suggestions for applied research:

- cost recovery;
- water user association performance;
- remote sensing;
- private sector participation in irrigation development; and
- performance and organization of irrigation agencies.

Several Missions have also approached ISPAN requesting assistance in the design of action research and applied studies agendas for their irrigation projects.

ISPAN will select a small number of universities and research institutions in the ANE Region to form a special relationship. Under the Regional Institution Program, the institutions will work closely with ISPAN in providing technical assistance to Missions and counterpart agencies, take part in applied studies, and host regional policy issues-oriented workshops.

Based on visits to a number of candidate institutions and the review of detailed solicited proposals, ISPAN invited representatives of two universities to attend the workshop. Dr. M'hmmmed Sedrati, Director of the Institute of Agronomy and

Veterinary Science Hassan II in Morocco, and Dr. Honorato Angeles, Dean of Engineering, Central Luzon State University in the Philippines, attended the workshop and discussed their programs. Their presence at the workshop provided them and other participants an opportunity to learn more about the potential role the institutions might play through ISPAN.

3.2.3 Inauguration Ceremony

The workshop was inaugurated by Dr. Yadev Prasad Pant, Minister of Water Resources of His Majesty's Government of Nepal; M.D. Karki, Director General, Department of Irrigation of His Majesty's Government of Nepal; Milton Frank, United States Ambassador to Nepal; and William S. Rhodes, Acting Director, USAID/Kathmandu. Texts of their speeches are found in Annex C.

3.2.4 Irrigation Management Game

The afternoon session was devoted to a simulation game used for training and sensitizing irrigation staff to both technical and social issues involved in irrigation management. The Irrigation Management Game was developed by Ian Carruthers and Martin Burton at Wye College, in collaboration with Sir M. MacDonald and partners, Consulting Engineers, Cambridge. Ian Smout and Tom Franks, who took part in the development and initial testing of the game, acted as game facilitators.

The game seeks to demonstrate to players:

- the relationship of crop growth and returns to water supply;
- the relationship between the geographical location of a given farming unit within the irrigation system and its supply;
- the relationship between the work performed by staff of the irrigation department and the water distribution to the farmer; and
- the various options and methods of water distribution.

Workshop participants were divided into two independent groups, playing the game simultaneously under the two leaders. Players were selected to serve as Water Controller and Trader. Others paired into teams and were required to make decisions concerning cropping pattern and water distribution. The game was played for two seasons. The playing was rapid, and the Controller and Trader easily undermined farmer strategies.

Participants indicated the following lessons were learned from playing the game.

- Farmers need more information to make effective decisions. Decisions were haphazard and reflected reactions to impending crises.
- Farmers suffered from a lack of communication. Those in control of resources did not provide farmers with sufficient or timely information.
- Playing strictly according to accepted rules was likely to lead to failure. The players who were most successful told the water controller they would grow one crop and then "illegally" grew another.
- The irrigation "system" was not a system, but a complex of individual decisions. Under the requirements of the moment farmers never gained a sense of the larger picture.

A brief paper on the use of the game appears as Annex D.

3.3 Day Three

3.3.1 Mission and IIMI Update

A discussion was held on USAID/Delhi's irrigation program and the activities of IIMI.

3.3.2 Institutional Strengthening and Participation

The focus of the session was on enhancing the ability of agencies to work effectively with water users. The objectives were

- to examine the impact of public agency objectives and policies on the interaction between the agency and users;
- to analyze models for sharing various authority and their impact on irrigation system performance;
- to develop practical approaches to enable agencies to work effectively with water user groups; and
- to identify common problems and inputs needed.

Eng. Ben Bagadion, Khun Nakool Thongtawee, and Dr. E. Walter Coward, Jr., gave presentations. The moderator was Ed Stains of USAID/Cairo.

The Philippines: Ben Bagadion provided guidelines for building agency capability for promoting the participation of water users in irrigation development. He indicated the requirements for building this capability: appropriate leadership within the agency, appropriate policies, an effective method for organizing farmers into irrigation associations, and the re-orientation and transformation of the agency and its staff. He drew upon his experiences as Assistant Administrator of the National Irrigation Administration in the Philippines, where he instituted a farmer participation program.

In order to institutionalize such a program, Eng. Bagadion found that supportive leadership within the agency was required. Senior leadership needed to adopt a performance evaluation system for agency staff, mobilize external support, provide incentives, establish effective training for both staff and water users, and establish an effective monitoring and evaluation system for water user groups.

The discussion period focused on the need for innovative and courageous leadership within an agency, supported by leadership training, and the legal status of water user groups which enable them to deal directly with the agency. Annex E provides an outline of the presentation.

Thailand: Nakool Thongtawee discussed recent progress made by the Royal Irrigation Department in Thailand in encouraging farmer participation. The first effort, in 1963, was unsuccessful. It employed a top-down approach which created essentially paper organizations. More recently, RID has begun new initiatives which seek to modify the attitude of the department's leadership, refashion the policy framework, and develop a model for nationwide replication.

In answer to a question concerning whether the experiences of one country can be used to develop programs in another, Khun Nakool noted that centuries old water user groups may be found in northern Thailand. They are characterized by their equity and simple rules. Despite attempts by RID, the systems could not be transferred to other parts of Thailand. More recently, RID has used technicians to adapt the Philippine experience to Thailand.

Indonesia: E. Walter Coward, Jr., identified two broad types of irrigation systems: national, which are government built, operated, and maintained, and local, which are under the responsibility of local groups. In order for an agency to deal effectively with these local systems, it requires a sound policy, knowledge of the system, an effective system to learn from past actions, and an ability to act jointly with the local groups.

Comments: Ed Stains noted that the three presentations shared several common points:

- attitudes of individuals in irrigation departments require change over time;
- a lengthy time frame is needed; and
- credibility must be established within and outside an agency.

With regard to the operation of USAID, he indicated that it is not itself an example of an efficient agency. There is a regular change in personnel with consequent changes in attitudes, policy, and direction. USAID suffers from poor internal communication, particularly between field professionals and agency policy makers. USAID staff tend to deal with situations which are familiar, and although they regularly recommend change, they often do so without understanding the agency's power structure or the host government's incentive system.

3.3.3 Country Experiences

Participants from Missions and agencies in the Philippines, Pakistan, Sri Lanka, and Nepal discussed their efforts in institutional development. Presentations focused on the following points:

- the meaning of institutional strengthening in development projects and the kinds of activities involved;
- the participatory elements in the program and how water users are specifically encouraged to become involved;
- the institutional strengthening activities which have and have not worked; and
- the anticipated next steps.

Annex F is a summary of the presentation by Billy Mejia, Manager of the Institutional Development Department, NIA.

3.3.4 Institutional Strengthening for Participation: Problems and Solutions

The session was devoted to a small group task focusing on persistent problems in institutional development in the countries represented and the resources needed to address them.

Participants identified the following problems:

- unclear role for agencies working with water;
- government procedures which discourage communication and farmer involvement;
- limitations in agency funds for evolving new programs;
- lack of national water policies for water rights;
- absence of appropriate incentives for agency staff and farmers;
- lack of coordination in ministries and line agencies;
- breakdown in control of the irrigation system and unreliability of the water supply;
- lack of commitment of agency leadership; and
- segregation of institutional and technical activities.

The following actions were suggested to address these problems:

- assess the irrigation agency in terms of its policies, methods, legal framework, and training programs;
- identify the locations and types of breakdowns in the physical and administrative systems and develop and test solutions for the breakdowns;
- design and establish a strong monitoring and evaluation system which can identify and address implementation problems;
- establish a viable incentive program for government employees to encourage their participation and responsiveness;
- strengthen or create an effective preventive maintenance system;
- emphasize coordination among donors and with host governments to improve the effectiveness of foreign assistance;
- proceed via pilot projects, whenever possible; and
- determine which systems would be most advisable to turn over to farmers and identify and implement mechanisms for doing so.

3.3.5 Field Trip Preparation

Participants were given an overview of the Gadkhar Irrigation System by Stan Peabody, Prachanda Pradhan, and Upendra Gautam. Participants then formed four small groups. Each group prepared questions for their interviews with farmers or officials. Interviews were to focus on either cost recovery or institutional development.

3.4 Day Four

A field trip was conducted to Gadkhar Irrigation System, Rasuwa-Nuwakot Integrated Rural Development Project.

3.5 Day Five

3.5.1 Reflections on the Field Trip

Each field group made a brief report of its findings in a general session.

3.5.2 Cost Recovery

The objectives of the session were

- to identify cost recovery objectives and mechanisms;
- to examine finance mechanisms and the institutional context of irrigation financing;
- to list cost recovery problems of Mission/country projects; and
- to identify inputs needed to resolve cost recovery problems.

Dr. Les Small, Associate Professor of Agricultural Economics at Rutgers University, provided a framework for dealing with cost recovery. Defining cost recovery as the financial receipts resulting from irrigation, he indicated mechanisms employed by governments to recover investments: irrigation service fees (water charges), betterment levies, and benefit taxes, and suggested that donors and host governments must carefully identify the objectives of cost recovery programs. These may include:

- promoting success in irrigation through good investments, proper construction of facilities, satisfactory operation and maintenance, and efficient water use by farmers;
- promoting fiscal efficiency;
- promoting equity; and

- satisfying external powers.

Dr. Small then identified conditions and the mechanisms for cost recovery for each objective. Focusing on the institutional context of financing and cost recovery, he illustrated the distinction in terms of irrigation agencies between financial autonomy and financial dependence. In the former situation, the irrigation agency is financed by direct cost recovery methods such as irrigation service fees and betterment levies. An outline of the presentation is provided in Annex G.

3.5.3 Country Descriptions of Cost Recovery Dimensions

Participants from USAID and host countries were asked to meet in small groups to identify their countries' objectives for cost recovery programs. Reports from groups indicated that both USAID and host government objectives tend to focus on satisfactory O&M and fiscal efficiency (sustainability). Host countries also indicated the need to satisfy external powers. Results are found in Annex H.

3.5.4 Case Study of Cost Recovery: the Philippines

Ben Bagadion discussed the evolution of irrigation cost recovery in the Philippines. By providing an historical perspective, the presenter demonstrated that the program required a change in the charter of the National Irrigation Administration. NIA was mandated by law to recover its annual operating expenses, and instituted its cost recovery and farmer participation programs in response to this mandate.

3.5.5 Cost Recovery: Inputs Required

Participants again formed small groups by country contingent to identify the cost recovery mechanisms currently employed and their institutional context. Results appear in Annex H.

3.6 Day Six

The objective of this session was to examine ways in which ISPAN could be more responsive to Mission needs. Workshop participants were asked to review ISPAN's applied studies and information transfer programs and to provide suggestions and comments for their implementation.

Suggestions for the applied studies program included:

- rephrasing "problem areas" as "lessons learned;"
- identifying other donor study efforts prior to ISPAN design;

- emphasizing collaboration with other donors and local research institutions;
- encouraging requests from irrigation agencies and other national institutions to obtain support of senior policy-makers;
- developing a working group of researchers, policy-makers, and Mission staff within a country to define areas for study; and
- packaging results of the studies to show their usefulness.

Suggested changes in study topics included:

- focusing on farmer constraints rather than system constraints;
- refocusing studies on the impact of irrigation on the poor and women to studies of the impact of irrigation on household resources; and
- adding the following study topics: systems management related to diversified cropping; drainage, waterlogging, and salinity; and remodelling and rehabilitation.

The session ended with individual meetings between Mission personnel, host country officials, and ISPAN staff to discuss specific upcoming or potential assignments.

At the conclusion of Day Six, participants evaluated the workshop. Their assessments are summarized in the following chapter.

Chapter 4

WORKSHOP PARTICIPANTS' ASSESSMENTS AND SUGGESTIONS

4.1 Summary of the Evaluations

Forty-one of the fifty-six workshop participants responded to the evaluation instrument. A number of those attending earlier sessions were unable to stay to the workshop's conclusion due to prior engagements. The standard evaluation form requested an assessment of the design and delivery of the workshop.

Following the completion of the forms, participants were also given an opportunity to express their opinions concerning positive and negative aspects of the workshop and suggestions for a subsequent regional irrigation management workshop scheduled for the following year.

Participants' comments may be summarized as follows:

- the workshop was an important forum for networking and the exchange of ideas;
- the presentations of conceptual frameworks for institutional development and cost recovery by Ben Bagadion and Les Small were very helpful as introductions to the issues;
- the workshop provided a good opportunity to learn more about ISPAN's activities;
- the field trip was useful as an efficient overview of attempts at irrigation development in Nepal;
- the Mission updates ought to have been more focused;
- time ought to have been devoted to a session focusing specifically on issues for AID staff;
- the irrigation management game would have been more instructive if it had been adapted to reflect specific aspects of the field trip site; and
- more time for participants to interact informally ought to have been scheduled.

4.2 Suggestions for the 1989 Workshop

Participants were asked to provide suggestions for the next workshop. Their responses included the following:

- more advance notice of the details of the workshop program to help the Missions select appropriate participants;
- further examination of cost recovery, drawing on the experiences of a small number of Missions and/or counterpart agencies as case studies and the development of common strategies that might be applied by USAID and counterpart agencies;
- an examination of the interrelationships among cost recovery, institutional strengthening, and farmer organizations;
- attention to the legal aspects of institutional development and cost recovery;
- discussion of the findings of applied studies supported by ISPAN;
- an AID session on performance-based disbursement; and
- another one-day field trip.

ANNEX A

WORKSHOP PARTICIPANTS

ANNEX A

WORKSHOP PARTICIPANTS

<u>Participant</u>	<u>Title</u>	<u>Address</u>
<u>EGYPT</u>		
Carmack, William J.	Irrigation Engineer	Irrigation & Land Development AGR Box 10 USAID/Cairo
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Mazen, Ahmed Aly	Head of Irrigation Department and 1st Under Secretary	Ministry of Public Works & Water Resources Tahrir Square Cairo
Stains, Edwin D.	Director	Office of Irrigation & Land Development AGR Box 10 USAID/Cairo
<u>INDIA</u>		
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Kulkarni, Prabhakar Reshav	Irrigation/Training Engineer	Coordination Unit USAID Maharashtra Irrigation Program 1201 S. H. Shivtrith Shivanagar F.C. Road Pune, Maharashtra, 411004
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Wendel, Dennis	Project Officer	USAID/New Delhi
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INDONESIA

Blank, Herbert	Civil Engineer	Agriculture & Rural Development USAID/Jakarta
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Siskel, Suzanne	Social Science Advisor	Small Scale Irrigation Management Project USAID/Jakarta
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MOROCCO

Sedrati, M'hmed	Director	Institut Agronomique et Veterinaire Hassan II P.O. Box 6202 Rabat
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NEPAL

Aryal, Binod K.	Project Director	Department of Irrigation Irrigation Management Center Tahachal, Kathmandu
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Breslar, Jon H.	Project Officer	Agriculture & Rural Development USAID/Kathmandu Kalimati, Kathmandu
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ANNEX B

WORKSHOP PROGRAM

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WORKSHOP PROGRAM

Sunday, April 24

SESSION 1: WARM-UP/WORKSHOP OVERVIEW/MISSION UPDATES

- 5:00 p.m. Welcome/Introductions
Stan Peabody
Graeme Frelick
- 5:30 p.m. Expectations/Objectives/Schedule
Kathy Alison
Graeme Frelick
- 6:00 p.m. Mission/Country Updates
Pakistan - Alvin Newman
Indonesia - Suzanne Siskel
Nepal - Jon Breslar
- 7:30 p.m. Reception, Dinner, and Cultural Show

Monday, April 25

SESSION 2: MISSION UPDATES/ISPAN OVERVIEW

- 8:00 a.m. Mission/Country Updates
Yemen - John Rifenbark
Sri Lanka - Jack Pinney
Egypt - Ed Stains
Philippines - Chuck Rheingans
- 9:10 a.m. ISPAN Overview
ISPAN Current Status - Stan Peabody
ISPAN Structure - Fred Besley
- Panel Presentation:
Technical Assistance - Tony Garvey
Applied Studies - Peter Reiss
Regional Institutions - Mohammed Sedrati
- Honorato Angeles
- 11:50 a.m. Charge to Participants
Stan Peabody
- 12:00 noon Lunch

Monday, April 25

**SESSION 3: WORKSHOP INAUGURATION/IRRIGATION
MANAGEMENT GAME**

- 1:00 p.m. Workshop Inauguration
Minister of Water Resources, Yadav Pant
Director General of Irrigation, Mohan D.
Karki
U.S. Ambassador to Nepal, Milton Frank
Acting Director USAID/Nepal, William S.
Rhodes
Senior Water Management Specialist, AID
Washington, N. S. Peabody, III
Project Office USAID/Nepal, Jon Breslar
- 2:00 p.m. Irrigation Management Game
Tom Franks
Ian Smout
- 8:00 p.m. Reception/Dinner
Host: Department of Irrigation, Nepal

Tuesday, April 26

**SESSION 4: MISSION UPDATES/INSTITUTIONAL STRENGTHENING
FOR PARTICIPATION**

- 8:00 a.m. Mission/Country Updates
India - D. R. Arora
International Irrigation Management
Institute (IIMI) - Doug Merrey
- 8:40 a.m. Perspectives on Strengthening institutions
and Participation
Panel presents perspectives on strengthening
institutions and participation
- Moderator - Ed Stains USAID/Cairo
Panel - Ben Bagadion, Ford Foundation
 - E. Walter Coward, Jr., Cornell
 - Thongtawee Nukool, RID/Thailand
- 10:15 a.m. Country Experiences in Institutional
Strengthening for Participation
Philippines - Avelino Mejia
Pakistan - Muzammil Qureshi
 - John Foster
 - Jalil Ahmed

Sri Lanka - Hetti A. Karunasena
- W. Nalinasena Botejue
Nepal - Binod Aryal
- Upendra Goutam
- Robert Yoder

12:30 p.m. Lunch

2:00 p.m. Problems and Inputs Needed in Institutional Strengthening for Participation

2:45 p.m. Panel Summarizes and Responds
Morning panel (Bagadion, Nukool, Coward, Stains) identifies key inputs

3:30 p.m. Background of project for field trip

Stan Peabody
Prachanda Pradha
Upendra Gautam
Robert Yoder

4:30 p.m. Developing questions for the field trip

5:00 p.m. Wrap Up

Wednesday, April 27

SESSION 5: FIELD TRIP
Gadkhar Irrigation System, Chaughada Village Panchayat -- Rasuwa-Nuwakot Integrated Rural Development Project

6:30 a.m. Departure
Leave Hotel Malla

10:30 a.m. Arrival
Arrive at Chaughada Village

10:35 a.m. Begin Field Exercise
Meet Farmers/Officials at School
Break into Small Groups

12:00 p.m. Lunch

2:15 p.m. Farewell and Departure
Thanks to Officials/Villagers
Leave for Kathmandu

5:15 p.m. Arrival
Arrive in Kathmandu

Thursday, April 28

SESSION 6:

FIELD TRIP REPORTS/COST RECOVER

8:00 a.m.

Field Trip Report

Field trip groups prepare a report on what they saw that contributed to cost recovery and institutional strengthening

9:20 a.m.

Presentation

Posing of blocks/analytical question about dimensions of cost recovery

Les Small

10:30 a.m.

Country Descriptions/Cost Recovery Dimensions

Small groups by clusters of countries to describe cost recovery objectives, mechanisms and institutional contexts related to their programs' cost recovery dimensions

11:20 a.m.

Report

Groups report. Facilitators record dimensions on flip chart.

12:15 p.m.

Lunch

1:15 p.m.

Case Example of Cost Recovery: Philippines Ben Bagadion

1:45 p.m.

Changes in Objectives, Mechanisms and Institutional Context. Inputs Needed
Return to small groups and report

SESSION 7:

INDIVIDUAL/SMALL GROUP MEETINGS

Friday, April 29

SESSION 8:

ISPAN PLANNING

8:00 a.m.

Inputs Needed by ISPAN

Introduction - Stan Peabody
Core funding Situation - Fred Besley
Information Exchange - Tony Garvey

Small groups and resource people:

Training: Stan Peabody, Doug Merrey, Tony
Garvey

Applied Studies: Peter Reiss, Don Slack

9:40 a.m. Report

10:45 a.m. Evaluation

11:30 a.m. Closing Comments
Stan Peabody
Shiva Raj Pant
Jon Breslar

11:50 a.m. Workshop Ends

ANNEX C

INAUGURAL ADDRESSES

ANNEX C

INAUGURAL ADDRESSES

INAUGURAL STATEMENT OF MR. MILTON FRANK AMBASSADOR OF THE UNITED STATES OF AMERICA TO NEPAL FOR THE ASIA/NEAR EAST REGIONAL IRRIGATION MANAGEMENT WORKSHOP

Honorable Minister of Water Resources, Dr. Yadav Pant,
Director General of Irrigation, Mr. Mohan D. Karki,
Mr. Rhodes,
Dr. Peabody,
Distinguished Participants and Guests

Good morning and namaste.

It is indeed a very special pleasure for me to be here with you today. As many of you know, it was only last Friday that I had the privilege of presenting my credentials to His Majesty King Birendra Bir Bikram Shah Dev. My presence this morning at this important occasion, therefore, marks my first public appearance as U.S. Ambassador to Nepal. Your kind invitation to be here this morning is, therefore, an honor I shall always remember.

More important, however, is the privilege of participating in this occasion with such a distinguished group of professionals whose very act of being here in Nepal signifies nothing less than a solid commitment by our respective Governments: a commitment to address the difficult problems associated with increasing agricultural production and improving the overall well-being of people in developing countries.

Having been in country less than a week, I hardly qualify as an expert on development issues here in Nepal, or for that matter in the Asia/Near East Region. Nevertheless, through my many briefings in Washington, and my talks thus far with U.S. Embassy and USAID colleagues--and through my personal interest in these matters--I have been made aware of three fundamental realities that are pertinent to your workshop.

First, that implementing development programs in Nepal is not easy. This is certainly not because of any lack in Nepal's human talent and resourcefulness, but rather to such inherent difficulties as terrain, environment, and communication.

Second, that His Majesty's Government is wholeheartedly committed to fulfilling the basic needs of the Nepalese people, and to raising their standard of living to a level which can sustain development efforts and promote balanced economic growth. The

United States, too, is deeply committed to this goal, and will continue to work hand-in-hand with His Majesty's Government to make this goal a reality.

Finally, and relevant to the very essence of this Workshop, that South Asian nations in general, and Nepal in particular, have clearly made the development interests of the region more important than those of any one nation.

As one reviews the U.S. Government's development assistance to Nepal over the past 35 years, it becomes eminently clear that our programs have never been cast in a "here today, gone tomorrow" scenario.

Let's use irrigation as an example--after all, I do have a captive audience of irrigation experts!

Just since my arrival I have learned that 30 years ago the United States Overseas Mission to Nepal, the forerunner to USAID, built one of the first agency-managed irrigation systems in the Terai. This system, known as Sirsia, has survived and continues to irrigate several hundred hectares of prime agricultural land. But it has not survived as well as one might have hoped. Not only has the physical infrastructure fallen into disrepair over its 30 years of operations, but the social and institutional infrastructure as well.

Of course there are reasons for this - reasons that I am told are common throughout the Region and which give you a reason for being here today. What pleased me, however, was learning that last year Sirsia was taken up as a field site under Nepal's Department of Irrigation and USAID-financed Irrigation Management Project. I understand that essential repairs are now being made, and that innovative approaches to joint agency-farmer management are being tested with a view toward applying "lessons learned" to other systems nationwide. This is exciting work. I'd like to visit Sirsia soon--although my friends tell me that the Terai and Birgunj in May are not quite so delightful as Pokhara.

But what does the irrigation system I just mentioned really illustrate?

First, it shows that neither His Majesty's Government nor the U.S. Government is going to quit on a good thing. There are many "Sirsias" in Nepal and other countries of this region that could demonstrate significant and institutional infrastructure.

Second, this example shows that development efforts have little value unless their benefits can be sustained over time. The goal of our collective programs, therefore, is not to reap the immediate fruits of our investments, but to watch them grow in ways that contribute positively to the betterment of the economy and the

society. And, even though we do need immediate increases in agricultural productivity, the commitment to sustain these increases and to ensure that today's agricultural systems will still be viable tomorrow is the true test of our jointly supported development efforts.

Finally, our cooperative involvement at Sirsia illustrates that our respective Governments have a common commitment to making our assistance work - a commitment to making development efforts sustainable - even if it takes some time.

I understand that the major themes of this Irrigation Management Workshop - institutional strengthening and cost recovery - are intimately related to this issue of sustainability. Working these themes into a sustainable framework will certainly be a challenging task. I know from my own experience in my home state of California, where we have a true "culture of water," that building up the skills and the capacity of farmers and irrigation officials to deliver an agreed-upon quantity of water to a particular plot of land at a specific time is no easy achievement.

Nor is it a simple task to mobilize the human and financial resources required to make an irrigation system operate efficiently--season after season and year after year. But, I certainly do not see any reason for being pessimistic. What I would visualize your doing is turning these constraints into opportunities and weaving these two themes successfully into the many "cultures of water" that are represented in this room. I dare say that given the importance of irrigation in the Asia/Near East Region, this kind of weaving is a precondition to sustained agricultural and economic development.

You, therefore, as participants in this workshop, have a very challenging week ahead of you. You will have the privilege of grappling with some fascinating development issues. Had I not had so many mandatory commitments during my first days here, I would very much have enjoyed joining you for the remainder of this workshop. I do hope, however, that as you share experiences from one country to another, you not only build a mutual understanding of and appreciation for each others' programs in irrigated agriculture and irrigation management, but that you continue building a strong foundation for regional cooperation. This, after all, is what ISPAN, this workshop, and Asia/Near East development, are all about.

Mr. Minister, permit me to close on a personal note addressed informally to the participants. It is simply that in any culture and in any country, "all work and no play" can, in most cases, make for a less productive workshop. I say this because I am learning very quickly that Kathmandu is a wonderful city - and that our guests would be missing a rare opportunity if they were not afforded time to sample its wonders.

Again, thank you for the privilege of addressing you today. And, please accept my sincerest and warmest best wishes for a MOST successful workshop.

INAUGURAL ADDRESS DELIVERED BY HONORABLE MINISTER
FOR WATER RESOURCES DR. YADEV PRASAD PANT
REGIONAL IRRIGATION MANAGEMENT WORKSHOP

Distinguished participants from different countries. Ladies and Gentlemen.

It is my pleasure to inaugurate this Regional Workshop in Irrigation Management sponsored by the Department of Irrigation and the U.S. Agency for International Development which is being attended by irrigation specialists of the region. I congratulate the organizers for organizing a workshop on the topic like irrigation which has been so important to all of us. Organizing this regional workshop here, I presume, is indicative of the recognition that our country has received from the professionals and specialists engaged in irrigation management.

Almost all the countries of the region are basically dependent on agriculture. Our farmers have been traditionally dependent on irrigating their land and have their own established system of irrigation. I must say and probably all of you will agree with me that our farmers have over the period of time acquired sufficient knowledge about the management aspect of water. However, with the pressure of regulation and the urgency to intensify the agriculture production, the need to have efficient utilization of water has become more obvious. As such the farmers need assistance in renovating or creating their physical irrigation infrastructure. I think one of the issues that could be discussed in this workshop may be as to how the government should assist the farmers in making their system more efficient and durable.

In my view, irrigation management, both in its concept and process, provides a more accurately practical perspective on developing and sustaining irrigation sector. Today our concern is not only with increasing irrigated area quantitatively, but also with sustaining what we have expanded, what we have invested in the name of irrigation development. Irrigation management's focus on sustainability makes it a high imperative that irrigation users, in an organized way, should be involved in decision making regarding use of irrigation resources. Indeed, this is a big task from the point of view of where we are now. But we are not completely lacking in strength and inspiration either. We have success stories from the public irrigation sector also. Now the challenge upon the irrigation agency is to recognize the available strength, enhance it and expand. For this purpose, I feel that the irrigation agency, among others, should give priority to these activities, institutionalize effective irrigation user organization development program within itself; improve agency-user communication primarily on the basis of operation and maintenance requirements of an irrigation system; and of course not the last, develop

practical mechanism for resource management in an irrigation system that makes both the agency and user organization clearly accountable for their performance.

Irrigation in recent years and particularly in the developing countries has posed not only the task of extending physical irrigation facilities to the beneficiaries, but also the challenge of developing a system of management which could be based on people's participation. It is obvious that farmers with their limited resource cannot undertake major irrigation projects. It is also equally obvious that no matter how efficient the facilities would be, if the beneficiaries are not involved, the system shall not be sustained for long. It is also not possible for a government resource and machinery to maintain forever the irrigation facilities it creates. Hence, the experiences have led us to look at the irrigation system more from a participatory and multi-disciplinary viewpoint than looking at it as a responsibility of either the government or the beneficiary alone. In this approach, I think the irrigation engineers and technicians need to be oriented towards the whole concept. Irrigation is not only a canal, a group of people, and the crop-growing field; it is in essence a culture which has to be nurtured by the joint effort of the people and the implementors.

In Nepal under the dynamic call of our August Sovereign His Majesty, the King, we are embarking upon the plan for providing basic needs to the people of the country by the turn of this century. In this exercise of meeting basic needs, the contribution from the irrigation sector in boosting agricultural production is obvious. We have set up our goal of improving the existing irrigational facilities as well as bringing more land under irrigation. In this bid, we have adopted strategies which could lead us to the achievement of our goal.

In the development of irrigation, one needs to look at not only the big projects with large command area, but also medium and small scale projects with relatively smaller command areas. The terrain of a country and the availability of resources may not make it feasible to undertake large scale projects alone. The role of medium and small scale projects is obvious in this connection. We need also to look at the possibility of developing ground water potential. The easy availability of the ground water resources and the short gestation period as well as comparative simplicity of management in the harnessing of ground water resources may be a viable supplement in this connection. I hope the participants will have more detailed discussion and sharing of experiences in this connection.

In my view, I must say that the issues that are involved with irrigation management--be it the role of the government and the beneficiary, the mobilization of resources for maintenance and operation of the system, the organization and legal status of water

users, the intervening points of the government in farmers run irrigation system, the cost recovery and the levying of water charges and above all the ownership of the resource itself--are very important and interesting. Irrigation being a subject affecting all of us and also a matter being practiced by all of us for a long time, I am sure that all of you must have many things to say and varieties of experience to share. This workshop has provided an excellent opportunity for that occasion. There is nothing that is finite and absolute. Yet we can learn a lot from one another's experience and knowledge. In this context, I must express my deep sense of appreciation for the organizers of this workshop who have done this excellent work of bringing people to one platform. I am very much hopeful that your discussion will be most fruitful and rewarding.

In conclusion, I would like to wish the success of this workshop and declare this Regional Irrigation Management Workshop inaugurated.

Thank you.

WELCOME ADDRESS OF MR. MOHAN D. KARKI
DIRECTOR GENERAL, DEPARTMENT OF IRRIGATION
FOR THE
ASIA/NEAR EAST REGIONAL IRRIGATION MANAGEMENT WORKSHOP

Honorable Minister
Your Excellency
Distinguished Participants
Ladies and Gentlemen

It is a great pleasure for me to welcome you all to this Asia/Near East Regional Irrigation Management Workshop. The Department of Irrigation is indeed pleased that Nepal has been chosen as the venue for this Workshop, and that we take the opportunity to act as a co-sponsor with the USAID Irrigation Support Project for Asia and the Near East.

A focus on irrigation management, and specifically on the themes of institution strengthening and cost recovery, is essential if agriculture production is to be increased and our economy improved. Over the years, we have come to realize that constructing irrigation systems alone will not give increased yields in production. Indeed, construction is only the first step. The optimal utilization of our irrigation water resources is the ultimate objective. To make the systems perform well, we must focus on approaches that will encourage meaningful participation by farmers, mechanisms for mobilizing resources for adequate operations and maintenance, and the creation of institutions that can sustain increased irrigation development. In this regard, USAID's program in Nepal is an important one which focuses on the critical aspects of irrigation management.

We look to USAID through the irrigation management project and through ISPAN to work with us in developing our capabilities to meet the new challenges in irrigation development and to enable us to achieve the goals set in the basic needs program of His Majesty's Government

I once again welcome you and hope your stay will be quite pleasant, and the discussions on the various issues quite fruitful.

Thank you.

VOTE OF THANKS BY MR. WILLIAM S. RHODES
ACTING DIRECTOR, USAID, MISSION TO NEPAL
FOR THE ASIA/NEAR EAST REGIONAL IRRIGATION MANAGEMENT WORKSHOP

Mr. Minister, Mr. Ambassador, Mr. Karki, Dr. Peabody, Participants and Guests:

On behalf of the USAID Mission to Nepal, it gives me great pleasure both to welcome all of you participants who have come from other USAID Missions and other countries, and to extend a vote of thanks to all of you who made this workshop possible. Were I to thank everyone who contributed individually, which I would very much like to do, I'm afraid your real work would not begin until Thursday. So, in line with the theme of institutional strengthening, I will focus my remarks on the larger groups and institutions involved.

This Regional Workshop, from the time it was conceived, has enjoyed the total support and encouragement of His Majesty's Government, and especially of the Ministry of Water Resources and Department of Irrigation. I must stress, however, that their enthusiasm has by no means been limited to this week's activities. Indeed, it permeates through the entire irrigation sub-sector and makes it a very exciting time to be working on irrigation development in Nepal. Not only has irrigation become a priority area for agricultural growth and development, but also the focus for many broader policy and program initiatives designed to address critical institutional and financial issues. As a donor, we commend these initiatives and offer our continued support in making irrigated agriculture an even more viable part of the nepalese economy. Our whole-hearted thanks are extended to His Majesty's Ministry of Water Resources and to Minister Pant.

ISPAN's role in organizing this Workshop reflects the kind of superb technical support USAID/Nepal has come to expect from our AID Washington-based Science and Technology and Regional Bureaus. ISPAN's predecessor, the Water Management Synthesis II Project, has provided assistance to the Department of Irrigation and to our Mission on a number of occasions, and indeed was instrumental in conceptualizing USAID/Nepal's program and mobilizing our activities in the field of irrigation management. As AID's Asia/Near East Bureau moves into a new generation of irrigation activities, we commend ISPAN's mandate and appreciate energy it exhibits in strengthening the capacity of regional institutions to support the irrigation activities of host country governments and USAID Missions. I am hopeful that our program in Nepal will tap into ISPAN's unique combination of resources and talent. Our thanks to ISPAN and Dr. Peabody.

Finally, to you -- the participants of the Irrigation Management Workshop -- many of you will remember that the first such workshop,

held in Karachi last year, had 30 participants representing 6 countries in the region. Today, we have over 60 participants from 10 countries. Though I won't discount the charms of Nepal as being a factor in this increase, I think we attribute it more realistically to the increased emphasis that governments and donors are placing on sustainable agriculture and the need for improved management of irrigation systems in that context. You -- the participants -- are among the Region's experts in irrigation. You, in true "joint management" style, selected the key themes for discussion here. I think I can speak for all of us in saying that we hope this Workshop will encourage and enable you to come up with suggestions and strategies that will significantly improve the performance of irrigation systems in the Region. Thank you for your participation and your contributions.

May I echo the Ambassador in wishing you a productive workshop and a very pleasant stay in Kathmandu. Thank you.

ANNEX D

THE DEVELOPMENT AND USE OF THE IRRIGATION MANAGEMENT GAME

Martin Burton, Ian Smout and Tom Franks

ANNEX D

THE DEVELOPMENT AND USE OF THE IRRIGATION MANAGEMENT GAME

Martin Burton, Ian Smout and Tom Franks

1. Introduction

Training of irrigation staff and farmers is an essential component of plans for improved management and operation of irrigation schemes. However, difficulties arise with this due to the interrelationship between technical and social factors and due to the multidisciplinary nature of irrigated agriculture. Concepts of irrigation water requirements, fertilizer input levels and labor requirements are often difficult to set in context with observed practice such as farmers' theft of water, deliberate misallocation of water supplies by irrigation officials, and inabilities of neighboring communities to collaborate for more efficient use of resources.

Gaming simulation can help in this situation. By stripping concepts down to their essential components and combining them in a structured gaming framework, the various interrelationships which exist in irrigated agriculture can be experienced. Simulation requires that reality is modeled as exactly as possible, gaming simulation sets less stringent criteria in order to achieve a learning experience that is both educational and enjoyable.

The Irrigation Management Game is a gaming simulation which draws together some of the technical and social issues involved in irrigation water management. Initiated in 1982 by Martin Burton and Professor Ian Carruthers at Wye College, University of London, in collaboration with Sir M. MacDonald and Partners, Consulting Engineers, Cambridge, it has grown from an odd array of cloth and cardboard to a professionally produced and marketed package. There have been many changes to the game in its gestation; this paper describes the final package, which is designed for use in training programs for irrigation staff.

2. Objectives

The Irrigation Management Game (IMG) has been developed with the overall objective of demonstrating the impact on farmers and farm income from irrigation department staff's actions related to water distribution. This objective is achieved by structuring the exercise to emphasize the following features of irrigated agriculture:

- the relationship of crop growth and returns to water supply employing recently available data on crop yield response to water;
- the relationship between the geographical location of a given farming unit within the irrigation system and its supply;
- the relationship between the work performed by staff of the irrigation department and water distribution to the farmer; and
- the various options and methods of water distribution.

3. Brief Overview

In the Irrigation Management Game, participants take one of two roles, that of an irrigation department operation and maintenance official, or that of a village water manager. The scheme is based on a typical run-of-the-river irrigation scheme, with a main canal supplying water to eight tertiary units (Figure 1). The irrigation officials are responsible for water distribution along the main canal between the tertiary units (in the game this is done by writing on a large wall map at the front of the room), while the village water managers plan cropping and make water allocations within their tertiary units. In the game, there are usually two irrigation department officials and two village water managers per tertiary unit making a total of 18 participants in all. The game is managed by a Controller together with a colleague who acts as the Trader.

The pairing of participants is deliberate. Early experience with the game showed that people work better, and more interaction develops, if they are grouped in pairs. The pair can discuss strategy, check each other's calculations, and still have time to negotiate for additional water supplies from the irrigation officials or other farmers. This pairing of players has added considerably to the "buzz" and atmosphere generated during the game.

The game is usually played for two or three seasons over a period of four to five hours. Village water managers (VWMs) are responsible for an area of 40 ha, comprising four blocks of 10 ha. They plan their cropping patterns, plant their crops, and make requests to the irrigation officials for water supplies. Each season is divided into three crop growth stages with allocations of water being made along the main canal and then within the tertiary unit for each stage. This division into three is a simplification but is adequate to get across the required concept of yield response to water and the importance of the timing of water applications to crops.

For each stage, the irrigation officials allocate the available water in turn between the eight tertiary units taking off from the main canal. The VWMs then distribute their allocated water between their crops. Depending on the water available, the water supply received by each crop will vary from good to nothing at all. The yield of each crop is related to water supply by yield response to water graphs (Figure 2); the VWM thus has to use this information to decide how best to use the available water. As in real life, the final yield depends on water supply during each of the growth stages. For simplicity, water supplies to the crop are rated as Good, Medium, Poor, or None depending on the ratio of supply to requirement. A ratio of 1.0 is Good, between 0.5 and 1.0 is Medium, between 0.2 and 0.5 is Poor, and less than 0.2 is None (when no yield is obtained).

One of the main tasks of the VWM is to distribute the quantity of water supplied to the village among the 4 village blocks taking account of their water requirements and crop response to water shortages. Initially, this was done as a paper calculation, but this method of allocation was found to be most tedious and restrictive. Participants spent so much time doing these calculations that there was no time left for interacting with others. Figure 3 shows the improved procedure which is an example of a "gaming" solution. Each 20 ha block has its own "block board" with the field efficiency factor (FEF) marked on it. Histograms are constructed for each crop and each crop growth stage showing the water required to be allocated at the tertiary unit intake for that block. When a tertiary unit is allocated water from the main canal, the participants take wooden water counters from a cup up to the value of their allocation (each counter is worth five units of water). They place these against the histograms on the block boards and can quickly make their optimum balance of water allocations by moving counters between boards. No calculations are necessary. A further major benefit is that they now have something solid to use in transactions with other VWMs. They can buy, sell, and exchange water counters.

At the end of the three stages (and thus the end of the season), the VWMs calculate their final yields and the market value of their produce. Market values are calculated using crop market prices which are announced by the Trader at the end of the season. The total value of each tertiary unit's crop production is used as an indicator not only of the performance of the team running that unit, but also of the pattern or water distribution in the system. After two seasons, the game is drawn to a close, and the discussion period commences.

The most common topics raised during the discussion period at the end of the game are the value of water, the unfairness of the system of water distribution, the different water distribution practices, corruption of officials, theft of water by upstream farmers, the importance of timing of water applications, the need

for cooperation between farmers, and effective liaison with the irrigation department. These and other topics are raised immediately following the game, and often later in the training course, reference is made back to the game and a point raised therein.

4. Experience with the Game

The experience of playing the game varies with each group and each setting. The setting is important; if the room is small and cramped, participants find it difficult to move about between tables, and the level of interaction drops. With a large spacious room, participants will often get up and wander around just out of curiosity to see what others are doing. The best interactions and enjoyment from the game have come from groups that already know each other well. They are not inhibited and so adopt their roles more openly. However, the game is also extremely valuable as a mechanism for introducing people and concepts at the beginning of a training course. It is used for this purpose on an irrigation water management course held annually at the Mananga Agricultural Management Center, Swaziland.

Participants learn from the simulation and role play incorporated in the game. With simplified issues and a condensed time scale, trainees can follow through in a five hour period, typical procedures required for management and operation of an irrigation scheme. Also the role of irrigation managers is reversed to place them in the position of farmers. In this way, irrigation managers come to appreciate life on the receiving end and perhaps to better understand how farmers behave and how they perceive the Irrigation Service.

The effect of taking part in the exercise has always been to stimulate a very full and frank discussion between the participants. This is of great value when participants can exchange their own personal experiences of irrigation water management; it serves to identify common problem areas and possible solutions.

The game is a very useful exercise for drawing out people to comment on sensitive issues, particularly where the trainees are mature students, often in senior positions. A good example is the issue of corruption in irrigation management. In a lecture or ordinary discussion group, few people from developing countries are prepared to discuss corruption; it would be improper to suggest that it occurs. Following the game in which players can "bribe" those responsible for water distribution, the issues of intimidation, corruption, and bribery are raised as practical irrigation problems. It is extremely revealing!

One difficulty with this sort of gaming simulation is the balancing of the technical points incorporated in the exercise and the need

to make it an interesting and entertaining experience. If it is a stimulating experience and the participants become actively involved in the game, they discover and learn the technical points more easily than from a passive experience. Many of the changes which have taken place during the game's development have been directed at reducing the game's complexity and making it easier to play without delays while a few participants complete their work.

5. Development and Use

The first version of the game was tried in May 1982, and following repeated use, it has been refined to the stage where it is now a commercially available package. During this time, the "gaming" component has been considerably improved to make the game an enjoyable and dynamic learning exercise.

The presentation has also been improved. Initially, one set was made up at home using cloth, cardboard, and felt tip pens. As the game developed, various revised sets were made in a similar way. In March 1986, a number of copies were made commercially using a graphic artist and specialist production of the plasticized color wall map. The high quality presentation is important for a professional training exercise.

The game is in use in several universities in the United Kingdom and in universities and training establishments in the United States, Holland, Indonesia, Swaziland, and Morocco. Additionally, the game has been used in Sri Lanka, Australia, Sweden, India, France, and Bangladesh, and now in Nepal.

6. Conclusion

Training irrigation staff to manage and operate irrigation systems is a difficult task. One can lecture on the theoretical aspects such as the operation of gates and the correct functioning of discharge measurement structures. But irrigation managers know that these aspects represent just a small part of their daily work, and they are often overridden by social issues such as disputes between farmers, intimidation, and corruption.

Games can be used effectively to achieve this mix of technical and social issues. They enable messages to be conveyed and accepted which would not be possible in lectures and stimulate discussion of the issues.

The irrigation management game provides an enjoyable way of exploring various technical and social issues, including methods and practice of water allocation, yield response to water, competition between farmers for the available supplies, and interaction between farmers and irrigation staff.

IRRIGATION AREA MAP

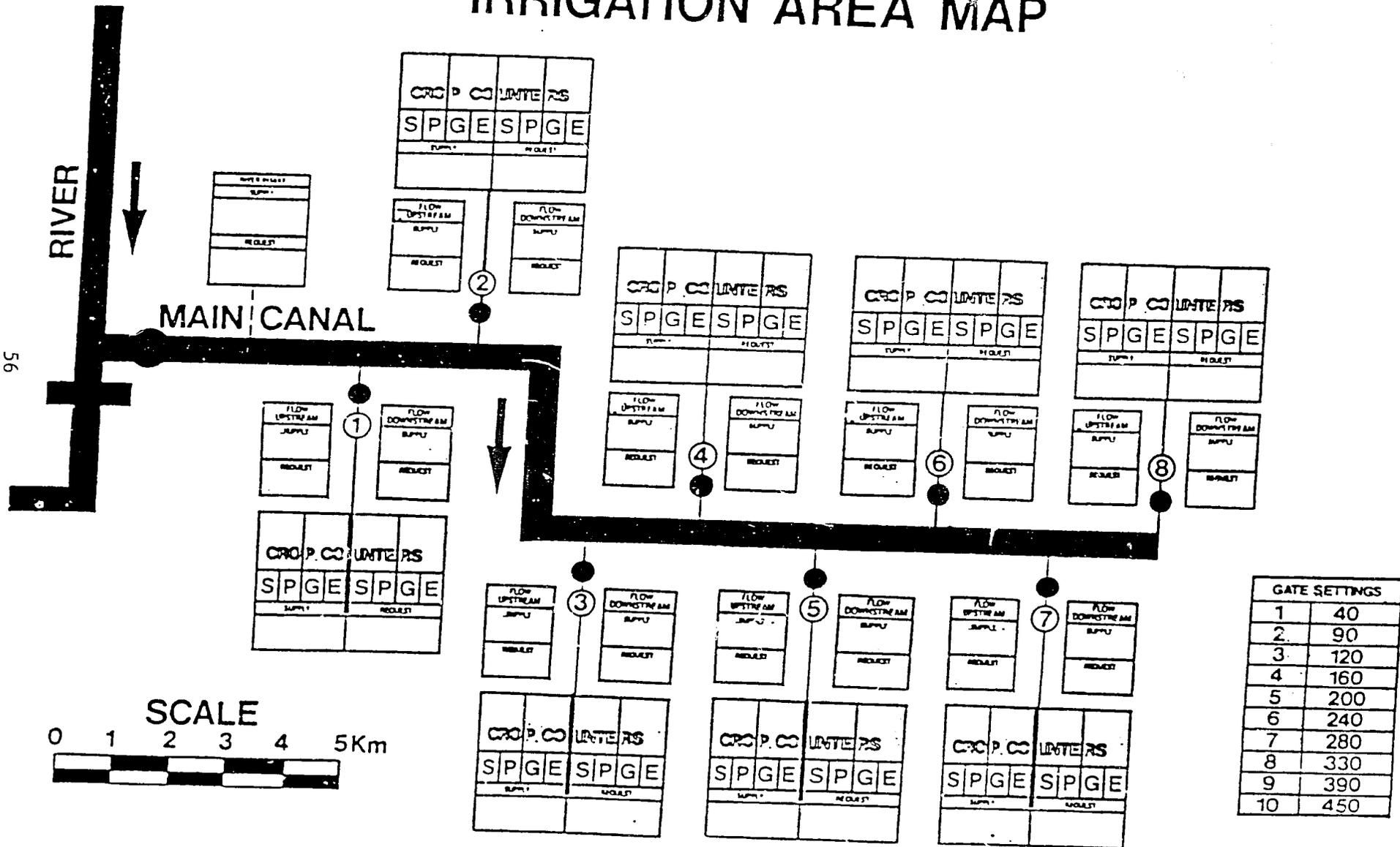
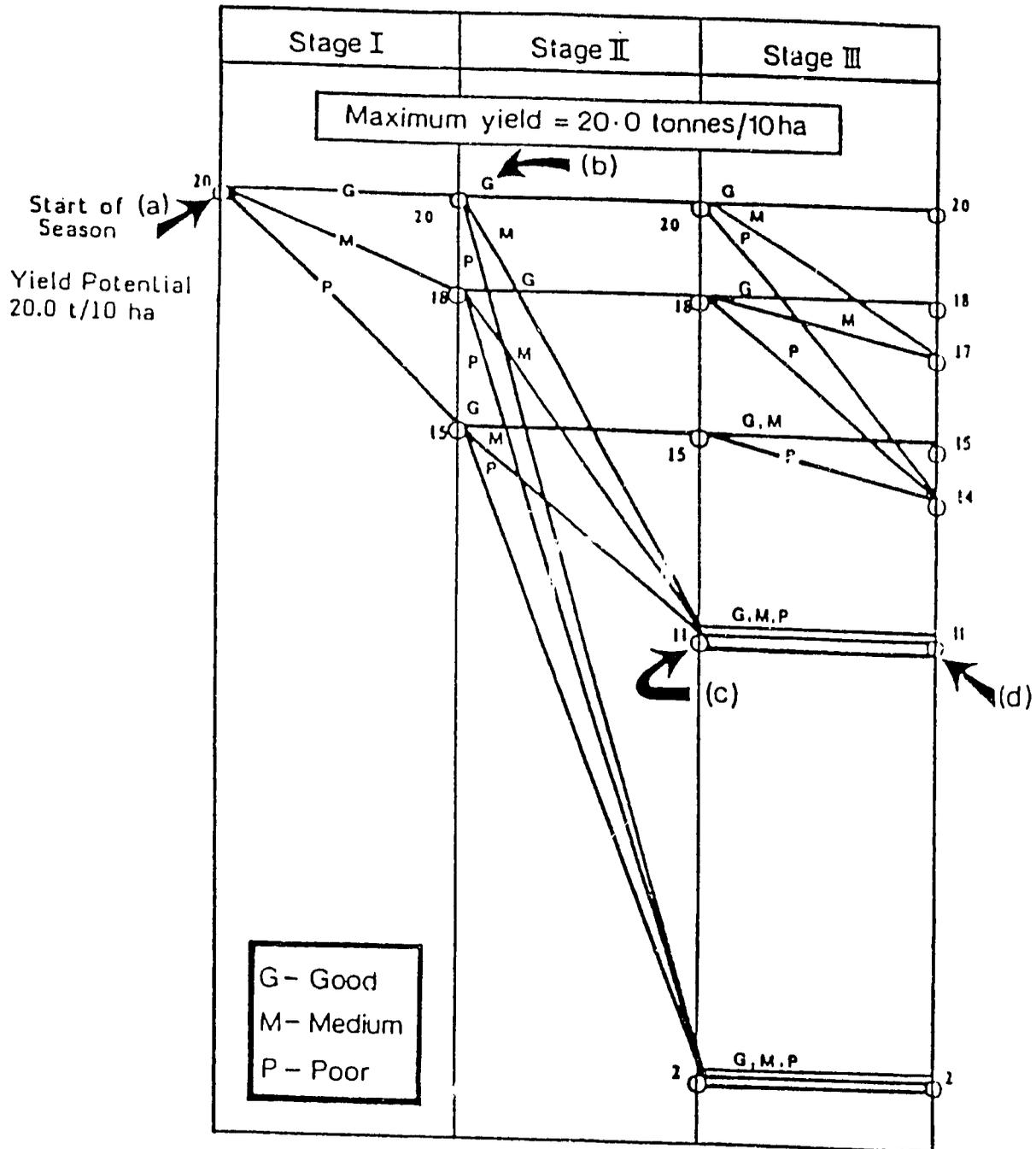


FIGURE 1

FIGURE 2

YIELD RESPONSE TO WATER

MAIZE

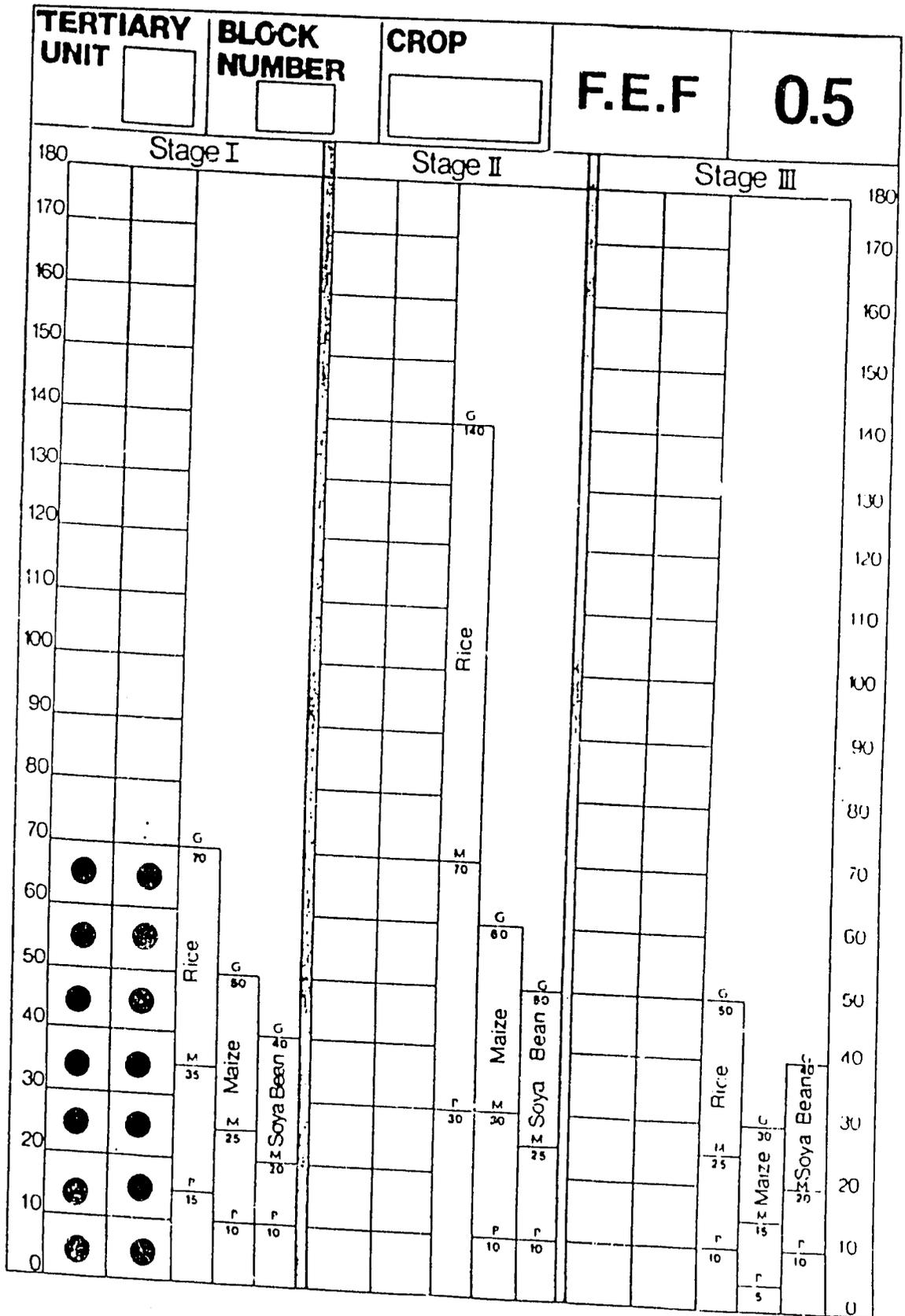


Example of how to use the Yield Response to Water Graphs

Crop : Maize

- (a) Start of Season, maximum yield potential = 20 t/10 ha
- (b) End of Stage I WSF = G (GOOD) Yield potential = 20 t/10 ha
- (c) End of Stage II WSF = M (MEDIUM) Yield potential = 11 t/10 ha
- (d) End of Stage III (end of season WSF = P) Final yield = 11 t/10 ha

FIGURE 3



ANNEX E

**Guidelines for Building Agency Capability for Promoting
Participation of Water Users in Irrigation Development**

Ben Bagadion

ANNEX E

Guidelines for Building Agency Capability for Promoting Participation of Water Users in Irrigation Development

Ben Bagadion

I. Requirements:

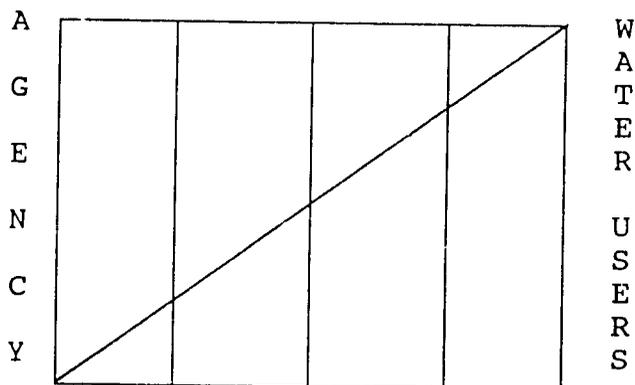
- A. Appropriate leadership within agency,
- B. Appropriate policies,
- C. Effective; method for organizing farmers into irrigation associations (IAs),
- D. Agency/staff re-orientation and transformation.

II. Stages of Capacity:

- A. Developing effective processes for promoting participation organization viable IAs, and assisting these IAs.
- B. Institutionalizing these processes throughout the agency.

For developing the process:

- 1. Establish policies for promoting participation addressing the following issues:
 - (a) Scope of participation in planning and construction of irrigation facilities,
 - (b) Level of participation in O&M.



- (c) Kinds of participation
 - Direct
 - Indirect (Irrigation fees)
 - (d) Legal aspects
 - (e) Water rights
 - (f) Agency assistance that enhances rather than impairs the development of self reliance.
2. Establish pilot projects for developing participation:
- (a) Use a learning process approach,
 - (b) Employ catalysis to assist water users but leaves decision making to water users,
 - (c) Use results of research on indigenous irrigation systems, if any,
 - (d) Secure external assistance for interdisciplinary action research,
 - (e) Document processes and analyze; identify and amend policies that inhibit participation.
- C. Improve on pilot projects (learning process):
- (a) Develop coordination mechanisms for technical and institutional activities,
 - (b) Improve technical work,
 - (c) Improve budgetary process.
- D. Evaluate results and if satisfactory expand:
- (a) Expand gradually,
 - (b) Develop training materials from actual field experience.
- III. For institutionalizing process throughout agency:
- A. Establish supportive leadership,
 - B. Adopt supportive performance evaluation for agency staff,

- C. Mobilize external support,
- D. Provide a system of incentives,
- E. Establish effective training systems for staff and water users,
- F. Establish a simple but effective monitoring and evaluation system for IAs.

ANNEX F

The Philippine Experience:
Developing Processes for Farmer Participation

Avelino U. Mejia

ANNEX F

The Philippine Experience: Developing Processes for Farmer Participation

Avelino U. Mejia

Since its establishment in 1964 the National Irrigation Administration (NIA) had programs for organizing farmers in national and communal systems using procedures characterized by:

- (a) "Top-down" approach to organizing farmers,
- (b) Separate implementation of technical and organizing process,
- (c) Organizing of farmers undertaken by another agency,
- (d) Farmers' participation minimal.

Results of organizing with minimal farmer participation were unsatisfactory.

- (a) In communal systems:
 - (1) In many cases facilities constructed by NIA not accepted by farmers,
 - (2) Where facilities had been accepted associations were often weak and O&M unsatisfactory,
 - (3) Poor amortization collection.
- (b) In national systems:
 - (1) Many farm level facilities removed by farmers,
 - (2) Farmers' groups did not take responsibility for O&M at farm level facilities,
 - (3) Poor irrigation fee collections.

NIA had to find a better process for organizing farmers. In the search several observations helped.

- (a) There were many indigenous irrigation associations that had been able to operate and maintain irrigation systems through many decades.
- (b) These indigenous systems had strong support from members and are managed in accordance with rules derived from the general membership.
- (c) The systems were planned and constructed by the farmers without assistance from the government.
- (d) Irrigation associations organized by NIA lacked grass-roots support.
- (e) To improve organizing process NIA had to maximize farmers participation.

In 1976 NIA started two pilot projects using a participatory approach by fielding trained irrigation community organizers (ICOs) to catalyze farmers participation and assist farmers in organizing themselves. The following policies and procedures were used:

- (a) ICOs served as catalyzers, not decision makers.
- (b) Farmers participated in planning and construction before the hand over for O&M.
- (c) Farmers were to repay the cost of construction without interest within 50 years.
- (d) Water rights were made appurtenant to the grantee (irrigation association) and not to the land so the associations have full control of allocation and distribution of water.
- (e) Farmers indicated preferred location of canals, conducted sectoral meetings for farming by-laws, prepared papers for SEC registration and water rights acquisition, secured right of way for canals, associated NIA survey parties, discussed repayment of construction cost, mobilized labor for construction, and checked use of equipment of cost of construction.
- (f) An interdisciplinary Communal Irrigation Committee (CIC) was formed to assist NIA in research and training for improving communal irrigation, and use of process documentation and socio-technical profiles.

Although one project was delayed by internal conflicts, both were generally successful. They indicated that to enable farmers to participate fully:

- (1) ICS should be given enough lead time for organizing and mobilizing farmers prior to construction,
- (2) Engineers should develop flexibility in their attitudes toward farmers and ICs and more understanding of social and institutional factors. Appropriate training program was needed,
- (3) There were agency policies and procedures that had to be revised, and
- (4) Engineers and ICOs should work together closely and integrate technical and organizing activities.

In April 1979, two more pilot communal projects were started to improve the processes along the following lines:

- (a) Integration of technical and institution activities in a flow chart within a framework of 8 to 9 months of organizing work and technical preparation prior to construction,
- (b) Procurement procedures, contracting with farmers' groups, funding procedures for better preparatory work, preparation of paddy elevation maps,
- (c) Training of engineers and support staff, and
- (d) Initial development of manuals.

The following year, 1980, a pilot project was established in each of the 12 regions following the improved procedures. The next year the participatory approach in communals was expanded to all provinces. It was also expanded to the nationals starting with the establishment of a pilot project in the Buhi-Lalo Irrigation Project with 1,000 hectares rehabilitation and 2,000 hectares new construction.

The effects of farmers' participation approach were as follows:

- (a) In communals
 - (1) Stronger irrigation associations,

- (2) Ready acceptance of completed facilities by farmers including obligation for payment of construction cost,
- (3) Improved maintenance of canals,
- (4) Increased counterpart contributions,
- (5) Higher irrigation fees payment,
- (6) Increased awareness of NIA staff and better relations with farmers.

(b) In nationals

- (1) Stronger irrigation associations,
- (2) Farmers initiate negotiations with NIA for turnover of entire or parts of national system to their association for O&M along terms beneficial to both association and NIA,
- (3) Better canal maintenance,
- (4) Higher irrigation fee collection,
- (5) Lower expenses for NIA so that NIA share of collection exceed expenses,
- (6) Some increases in irrigated area,
- (7) Increased awareness of NIA staff and improved relations with farmers.

ANNEX G

AN ANALYTICAL FRAMEWORK FOR COST RECOVERY

Les Small

ANNEX G

AN ANALYTICAL FRAMEWORK FOR COST RECOVERY

Les Small

A. Irrigation Cost Recovery

Cost Recovery: Financial receipts resulting from irrigation

Direct Receipts from beneficiaries who pay according to irrigation service or benefits

Indirect Receipts not directly linked to irrigation service or benefits

B. Domestic Irrigation Financing

Financing: Obtaining resources which are used to pay the costs of providing irrigation services

Direct Obtaining resources from beneficiaries in relation to the irrigation service or benefits they receive

Indirect Obtaining resources in ways not directly linked to irrigation service or benefits

C. Irrigation Beneficiaries

Direct Users of irrigation water

Indirect Non-users of irrigation water whose incomes or asset values rise because of irrigation

D. Methods of Direct Financing

Irrigation service fees (water charges) Levied on direct beneficiaries

Betterment levies Levied on direct beneficiaries

Benefit taxes Levied on direct beneficiaries

E. Methods of Direct Cost Recovery

Irrigation service fees
(water charges) Levied on direct beneficiaries

Betterment levies Levied on direct beneficiaries

Benefit taxes Levied on direct beneficiaries

F. Types of Irrigation Service Fees

Water Prices: Water user can affect total charge by water-use decisions

Area-based Fees Total charge depends on some combination of area, season and crop, but not on amount of water used

G. Methods of Indirect Financing

Taxes: Charges levied which are not linked to service or benefits

Implicit Taxation: Government revenues resulting from price controls

Secondary Income: Revenues earned by an irrigation agency from sources other than provision of irrigation services

H. Methods of Indirect Cost Recovery

Taxes: Charges levied which increase because of irrigation but which are not specifically linked to irrigation service or benefits

Implicit Taxation: Government revenues resulting from price controls and which increase because of irrigation

I. Institutional Context of Financing and Cost Recovery

Financial
Autonomy: At the margin, irrigation agency financed by direct cost recovery methods (expenditures linked to funds obtained from direct cost recovery)

Financial
Dependency: Irrigation agency financed by indirect means via government budget process (expenditures not linked to funds obtained from direct cost recovery)

Objectives of Cost Recovery

1. Promote success in irrigation
 - Good investments
 - Proper construction of facilities
 - Satisfactory O&M of facilities
 - Efficient water use by farmers
2. Promote fiscal efficiency
3. Promote equity
4. Satisfy external power

Objective: Improve Investments

Condition needed: Agency making investment decisions with financial stake in success

Type of cost recovery
measure implied: Direct

Objective: Improve Construction

Condition needed: Financially autonomous agency with authority to monitor and control construction

Type of cost recovery
measure implied: Direct

Objective: Improve O&M

Condition needed: Financially autonomous operating agency

Type of cost recovery measure implied: Direct

Objective: Improve efficiency of water use by farmers

Condition needed: Water user's payment depends on his water use decision

Type of cost recovery measure implied: Water pricing

Objective: Improve fiscal efficiency

Condition needed: Lower cost to implement cost recovery than alternative financing mechanisms

Type of cost recovery measure implied: Water pricing

Objective: Increase equity

Condition needed: Cost recovery measures permit distinctions among those who "deserve" to be treated differently

Type of cost recovery measure implied: Direct or indirect

K. Other Considerations in Financing and Cost Recovery

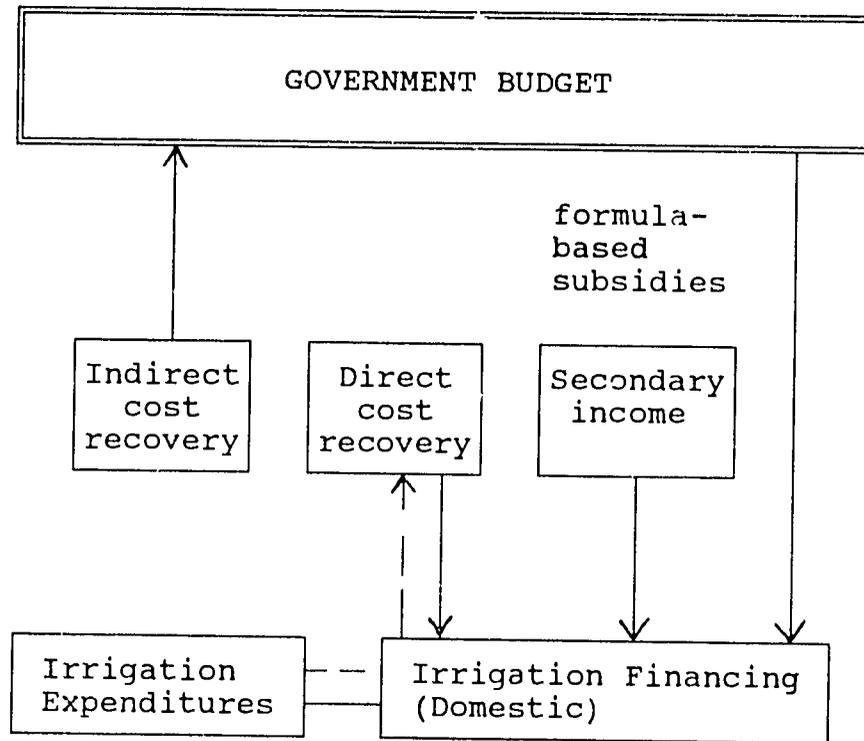
How much can the users afford to pay?

What costs need to be incurred?

What does cost recovery cost?

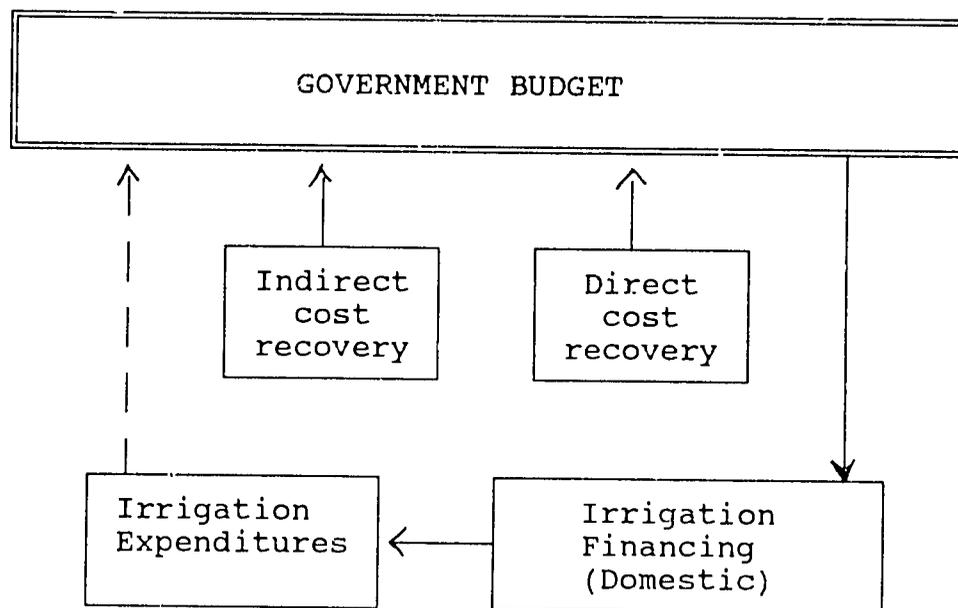
Should fees be uniform or project specific?

Figure 1. Irrigation Financing and Cost Recovery:
 Financial autonomy (financing linked to direct cost recovery)



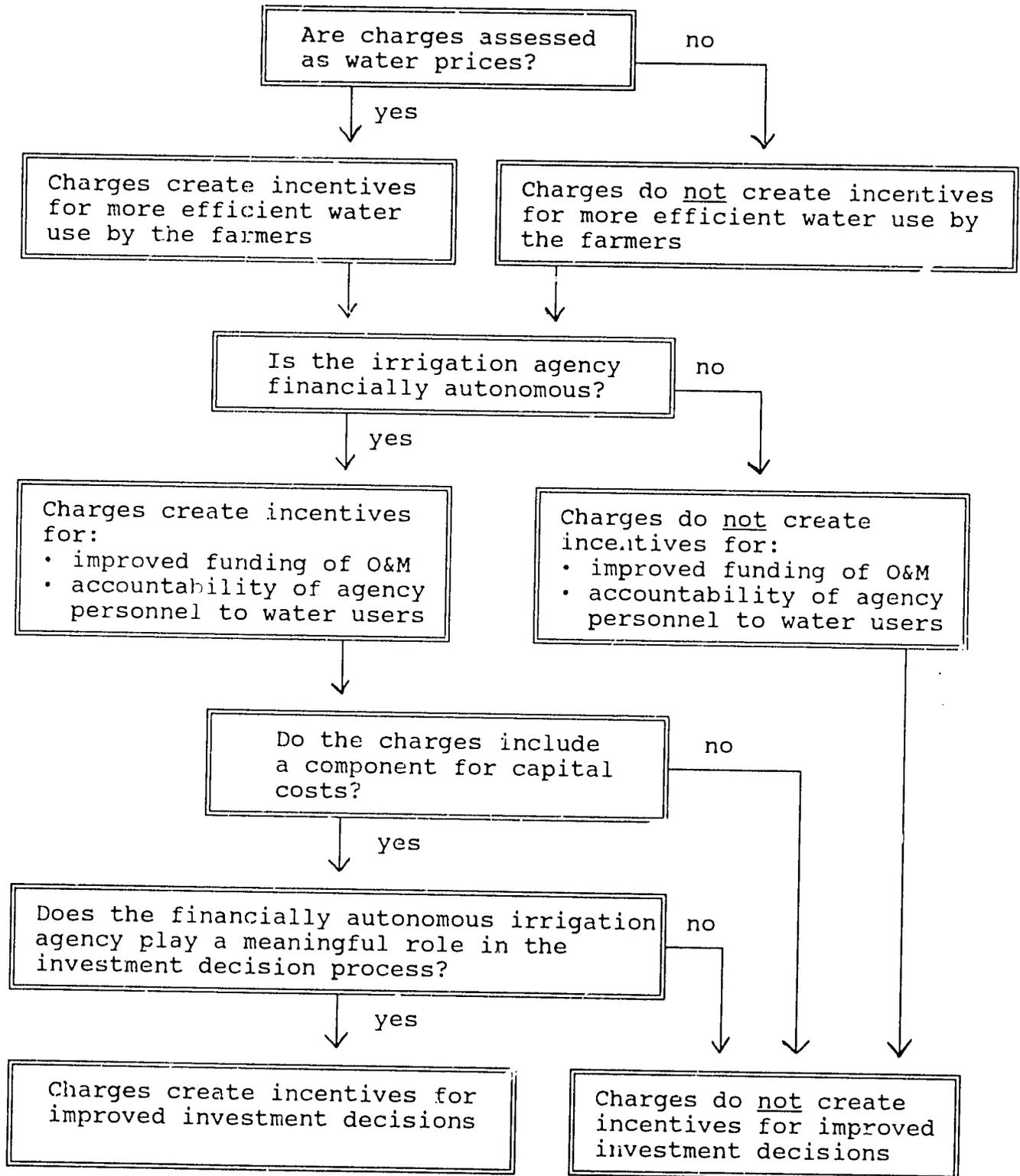
—————> Flow of funds
 - - - - -> Request for funds

Figure 2. Irrigation Financing and Cost Recovery:
Financial dependency (financing separated from cost recovery)



—————> Flow of funds
-----> Request for funds

Figure 3. Schematic representation of the effects of institutional and structural conditions on the incentives created by user charges.



ANNEX H

COST RECOVERY COUNTRY REPORTS

ANNEX H

COST RECOVERY COUNTRY REPORTS

Participants were asked to form country groups comprised of both USAID staff and national government officials. Using the framework for cost recovery provided by Dr. Les Small, they were asked initially to identify agency and country objectives. The exercise indicated that the objectives most often shared were fiscal efficiency and satisfactory O&M. Participants were then asked to identify mechanisms used by their countries for cost recovery and financing. Finally, they were asked to determine whether their countries' institutional context was autonomous, dependent or a combination, using the presentation's guidelines.

A. Cost Recovery Objectives of USAID and Host Governments

<u>Objective</u>	<u>Host Government</u>	<u>USAID</u>
1. Good investment	Morocco Philippines	Nepal Yemen Pakistan
2. Proper construction	Morocco Philippines Yemen	India Pakistan Yemen
3. Satisfactory O&M	Morocco Nepal Philippines Pakistan Egypt	Sri Lanka Nepal Philippines India Egypt
4. Efficient water use by farmers	Morocco Pakistan Yemen Philippines	Nepal Pakistan Yemen
5. Fiscal efficiency (sustainability)	Philippines Indonesia India Thailand Morocco	Philippines Indonesia India Thailand Sri Lanka Pakistan
6. Equity	Morocco Nepal Pakistan Thailand	Pakistan

7. Satisfy external powers	Morocco Sri Lanka Nepal Pakistan	Pakistan
8. Viable organization	Philippines	
9. Establish linkage between farmer and government for revenue generation	Nepal	

B. Mechanisms for Cost Recovery and Irrigation Financing

<u>Mechanism</u>	<u>Cost Recovery</u>	<u>Financing</u>
1. Water charges (prices)	Morocco Pakistan Nepal India	Morocco Pakistan
2. Water charges (area fees)	Philippines Sri Lanka Nepal Indonesia India	Philippines Sri Lanka Nepal
3. Betterment levies	Egypt Morocco Pakistan	Philippines Morocco
4. Benefit taxes	Pakistan	Philippines
5. General revenue		Nepal Thailand Egypt
6. Taxes	Morocco India Nepal Thailand Indonesia	Morocco
7. Implicit taxation	India Indonesia Egypt	
8. Secondary income		Philippines

C. Institutional Context for Cost Recovery

<u>Type</u>	<u>Country</u>	<u>Key Feature</u>
1. Autonomy	Philippines Pakistan	
2. Dependency		
3. Combination	Philippines	Capital construction and improvement
	Morocco	O&M autonomy construction
	Sri Lanka	Collection for O&M fee
	Nepal	Farmer operation