Forestry
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WORKING PAPER 12

Guidelines For Planning and Designing Training Activities In Forestry and Watershed Management

by

Kenneth N. Brooks and Peter F. Ffolliott

November 1993

Forestry For Sustainable Development Program
Department of Forest Resources
College of Natural Resources
University of Minnesota
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PREFACE

This paper is one of a series of working papers produced for the Forestry For Sustainable Development (FFSD) Program at the University of Minnesota. These working papers represent work in progress. Their purpose is to stimulate discussion among individuals working in the field of interest. The authors are Dr. Kenneth N. Brooks, Professor, Department of Forest Resources, College of Natural Resources, University of Minnesota, St. Paul, MN; and Dr. Peter F. Ffolliott, Professor, School of Renewable Natural Resources, University of Arizona, Tucson, AZ. They welcome comments and suggestions regarding the paper.

A major goal of the FFSD Program is to mobilize, synthesize, and disseminate existing technical knowledge in such a way that it can be used effectively in planning and implementing development projects that will contribute to sustainable development. As described in FFSD Working Paper 3, *The Role of Watershed Management in Sustainable Development* (Working Group on Watershed Management and Development 1988), a key component of this program is developing guideline documents, manuals, and other materials. Related training activities using these materials are key in promoting wider social forestry and watershed management application into the development work mainstream. This paper is a concise guide to plan training activities and describes the role of training and a modular approach to accommodate training activities intended to achieve the above goals.

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For further information regarding the FFSD Program, contact:

Dr. Allen L. Lundgren, Program Director (612) 624-1277, or
Dr. Hans M. Gregersen, Professor (612) 624-6298
Department of Forest Resources
University of Minnesota
115 Green Hall
1530 North Cleveland Avenue
St. Paul, MN 55108 USA Fax: (612) 625-5212

SUMMARY

This paper presents a framework for planning and designing training activities. It contains a set of training modules, to use or package for a variety of training purposes, that focus on forestry and the role of watershed management in sustainable development for different trainee audiences.

Training, in the form of a course, conference, symposium, seminar, workshop, or sessions, normally consists of *components* that include lectures, working experience, field trips, etc., called *sessions*. *Modules* group these components according to topical content. Following a *needs assessment*, the training activity tailors the modules and sessions to meet its goals. The paper describes module samples and sessions for different training purposes and trainees.

To insure a successful training activity, the design process should include constructing a time-line, showing when to attain specific planning *milestones*. Selecting appropriate trainers and preparing necessary training materials, such as training guides, training manuals, case studies and examples, are also important tasks. Managing the training activity efficiently with an appointed *manager* having the required authority, is necessary.

Timely feedback to administrators and trainers must evaluate the training activity and its subsequent impacts, to improve training activity quality and insure the training focuses on trainee needs. Training materials and methods must be appropriate for trainee skill levels, and the means by which they best learn. Trainers should use a standard professional method for student trainees. If trainees are experienced managers, trainers might find a more participatory, adult education method more appropriate. There needs to be effective communication between sponsors and trainees to determine their satisfaction. After getting feedback, trainers should change the training activities accordingly.

INTRODUCTION

Appropriate training activities are integral to all development activities. Individuals at various levels need information, and, in some cases, skills and methodologies to plan and implement projects. This paper outlines a modular approach for developing training programs, with several examples of their application, and a framework to plan and design training activities. Early in the process, it is important to set up the target group, or trainees, and identify their training needs (training activity objectives). Any training activity needs qualified trainers and training materials. Evaluating the training is also important. This paper presents several appendices with actual examples of training activities.

FUNDAMENTALS

Training Versus Education

Before discussing training in any detail, we must first compare *training* with *education*. Training and education are tools for transferring information and are essential in maintaining effective and innovative management and operational functions. Educational programs focus on general principles and deal with all information about a subject.

In contrast, training teaches specific information, functions, and skills to enhance a person's ability to perform management, operational, or research functions related to a particular discipline or subject. Training usually involves some type of exercise or practice that enhances a person's skills. Training should build upon trainees' existing knowledge and strongly encourage them to participate so they can benefit from the experience of others. We often associate education with formal, broadly based, degree-granting programs. Training, however, more closely resembles concentrated activities designed to provide new information or skills over a short-term.

Education and training are not mutually exclusive. Most training programs involve basic concepts, but educational programs can also use a specific approach to reinforce basic concepts. This working paper addresses the planning and designing of *training activities*.

The Role of Training in Sustainable Development

Because different groups of people need different types of information, you often need training at various levels to meet their training needs (table 1). The busy policy maker or the high level bureaucrat may be familiar with the terms "watershed management" and "social forestry." They may, however, understand little of the relevance of these words to sustainable development or to forestry and related projects. In contrast, agency field-level staff may need detailed information essential to carry out a project.

Table 1. Who needs to know what about natural resources management.

	Types of information and knowledge								
	Background information on:								
	Benefits and Linkages	Needs	Constraints	Technology and Resource Requirements	Techniques of Watershed Management Planning	Design, Evaluation, and Appraisal Methods	Technical Options	Management and Organization	Field Techniques
Policymakers and sector planners	A	A	A	A	A	–	–	–	–
Project-level planners and managers	LS	LS	LS	LS	S	LS	S	LS	LS
Field-level staff	LS	LS	LS	LS	–	–	LS	LA	LS
Local leaders and NGOs	LA	LA	LA	LA	–	LS	LS	LS	LS
Farmers and other land users	LS	LS	LS	LS	–	LS	LS	–	LS
"Teachers of teachers"	S	S	S	S	S	S	S	S	S

* A = general appreciation; S = specific knowledge; LS = local specific knowledge; LA = local general appreciation.

Source: From Working Group on Watershed Management and Development (1988).

The following represents different training levels aimed at broadly defined groups with distinctive training needs:

Strategic Level — Strategic level training, for example, might aim at providing policymakers and sector planners with a general awareness of the economic, environmental, and social importance of watershed management in natural resource development. Local leaders and nongovernmental organizations (NGOs) are other groups to consider. Training might aim toward convincing the target audience of the importance of supporting watershed management programs. However, specific and detailed instruction concerning technical methods and implementing field practices are not appropriate.

Tactical Level — Tactical level training might aim at project-level planners and managers to enhance their understanding of project planning, designing, monitoring, appraising, evaluating, and managing. Training might emphasize how to use watershed management practices to achieve both protection and production goals, and can also include institutional issues.

Operational Level — Training at the operational level might aim at field-level staff who need specific detail for taking measurements, monitoring, installing equipment, analyzing data, etc. Appropriate topics might include: ways to implement soil conservation, construction of contour terraces and gully control structures, revegetation methods, species selection, and project management.

Trainer's level — A trainer of trainers might aim at people who, for example, would help *diffuse* watershed management methods and practices to others. Training would emphasize knowledge gain, teaching methods, and ways to adapt material to other situations. This group can include extension agents.

The goal of this paper is to set up a framework for planning and designing training activities. It will also develop a set of training modules to use or package for a variety of training purposes and for different audiences. These goals will focus on forestry and the role of watershed management in sustainable development. However, this manual does not deal with training and extension efforts at the farmer level.

A Modular Approach

Overview

Training can take many forms. Any type of training will usually consist of several lectures, working exercises, field trips, and other activities, which we call *sessions*. A hierarchy, as illustrated in table 2, groups these sessions into models according to topical content. Examples in the following sections will illustrate session and module concepts.

Table 2. Relationship between module sessions.

Training Activity		
Module 1	Module 2	Module i
session 1.1	session 2.1	session i.1
session 1.2	session 2.2	session i.2
.	.	.
.	.	.
session 1.j	session 2.h	session i.n

Sessions and Modules

Many topics dealing with integrated watershed management, multiple resource management, and related planning, design, and project implementation, already have been developed into training sessions and modules. Examples of sessions which can be grouped into modules are listed in appendix 1. However, until now, there has been no concerted effort to package these materials so that it is easier to conduct future training.

Table 3 presents an example of such a module. To organize a particular training activity, a trainer can use the module in several ways. For example, if the training activity is an overview of watershed management, perhaps the trainer would only use the general lecture. To devote more time to economic appraisal, more sessions can be added as needed. Depending on purpose, the trainer can formulate any combination of sessions from the basic modules. Trainers can also put together sessions in a building-block manner, designing modules to meet trainee needs.

Each module should contain an overview lecture that presents the conceptual framework and background for a particular subject. Examples could include:

Principles of planning
Concepts of watershed management
Concepts of sustainable natural resource development
Overview of erosion processes and control

Each module would include more specific and technical sessions that are more limited in scope. A module's structure contains general topics that proceed to more specific topics.

Table 3. Example of the training module approach for the topic of economic appraisal of watershed management projects.

Training Module:
Economic Appraisal of Watershed Management Projects

Sessions:

Lecture 1. *General Overview* - Lecturer presents the framework and overview of FAO Conservation Guide 16 (Gregersen et al. 1987). This could be a stand-alone lecture for some courses or could serve as an introduction to the topic for a more detailed coverage of the subject.

Lecture 2. Estimating input-output relationships for biological and physical changes. This can be expanded into the following sublectures:

- soil erosion-productivity relationships
- erosion-sedimentation relationships
- vegetative cover-water yield
- vegetative cover and streamflow pattern
- land management-water quality relationships

Lecture 3. Valuing inputs and outputs
Lecture 4. Comparing benefits and costs—measures of project worth.
Lecture 5. Use of economic appraisal in project design
Lecture 6. Dealing with uncertainty
Lecture 7. Presenting the economic appraisal

Exercises. Individual or small group sessions that work on:

Ex. 1. Developing input-output relationships—for example, the relationship between erosion and onsite crop production.
Ex. 2. Valuing exercise
Ex. 3. Economic analysis exercise

Case Study. The Loukkos Basin, Morocco, based on the following papers:

Brooks, K. N., H. M. Gregersen, E. R. Berglund, and M. Tayaa. 1982. Economic evaluation of watershed projects - An overview methodology and application. *Water Resources Bulletin* 18:245-250.

Tayaa, M. and K. N. Brooks. 1984. Erosion and sedimentation in the Rif Mountains of northern Morocco. In *Symposium on effects of forest land use on erosion and slope stability*, 23-29. IUFRO and the East-West Center, Honolulu, Hawaii.

Training Guide: Guidelines for training organizers and instructors that include:

1. Outlines for each lecture and exercise.
2. Selected audiovisual aids in support of the above.
3. Instructions for trainer in organizing and sequencing the various sessions; suggestions on how to package materials for different audiences and given time constraints.

Training Manual Components: Background reading material, that complements FAO Conservation Guide 16 (Gregersen et al. 1987). If available, Conservation Guide 16 can be used.

Types of Training Activities

The type of activity that satisfies a specific training need depends upon the audience and the training purpose. The term *meeting,* when used in training, is a *generic* term referring to a gathering or assembly of trainees for training purposes. Meetings can consist of a symposium, seminar, conference, etc. Many times people use these terms interchangeably, but each has a specific meaning for a different purpose. In each of the different training activities described below, trainers would expect trainees to gain a particular set of skills and knowledge on a subject. We define the different types of training activities as follows:

Course—a series of training modules leading to a "certificate of completion" or equivalent that relates to a particular subject. A course is a unit of instruction that can consist of lectures, examples, case studies, problem-solving exercises, field trips, and other activities.

Conference—a formal consultation or discussion on a range of subjects pertaining to a topic or theme; it is a format for the interchange of viewpoints.

Symposium—a conference in which a particular subject is discussed and options expressed concurrently; it consists of a collection of options on a subject.

Seminar—a meeting in which a group of trainees, under the direction of a trainer, engage in discussions and exchange viewpoints that focus on original research or a new idea or concept.

Workshop—a series of problem-solving exercises in which trainees complete specific assignments.

Study tour—extended field trip, or series of field trips largely for demonstration purposes; comprised of modules and sessions as a training activity entity or used to complement other training activities.

Trainers can use more than one type of training activity. For example, a conference may begin a training activity (which can be open to a broader audience), followed by a technical course, workshop, or study tour which provides trainees with more specific skills.

Types of Learning Methods

Sessions can employ several basic learning methods, grouped by subject matter into modules. A training activity can use a combination of the following learning methods:

Lectures — oral information from trainer to trainees usually accompanied by viewguides, slides, and other visual aids. Trainees with limited background on the subject should gain new knowledge.

Lecture-discussion — oral information to trainees, providing interaction between trainer and trainees, and using trainees' collective experiences to confirm information presented on a subject.

Panel discussion — group interaction among trainees, directed by the trainer toward a specific goal. It can involve problem solving, consensus building, and decisionmaking by the group.

Small group discussions — group interaction among trainees but less formal than the panel discussion. The trainer provides varying content and leadership aiming at problem solving, consensus building and decisionmaking.

Case study — report of a problem or situation by a designated presenter, who usually has direct knowledge of the situation. It is usually a detailed, in-depth discussion based on experience that considers all pertinent aspects and attempts to point out lessons learned.

Examples — illustrative discussions that point out methods or situations without the in-depth detail and all-inclusive considerations of a case study.

Problem-solving exercise — application of knowledge to a given hypothetical situation to gain practical acquaintance or skill in a subject. These are usually working sessions to practice applying methods or knowledge gained in the training activity.

Structured role playing — individuals in trainee groups assume role playing with different levels of direction and background information. Its purpose is to make individuals more aware of how they or others would react in new situations.

Game or simulation — extended, structured role playing with specific rules and a larger trainee group. It helps identify behaviors and attitudes in different settings.

Demonstration — physical actions which describe, illustrate, or explain a subject by example.

Field trip — excursion to a different location for demonstration purposes. It often complements other learning methods in information delivery.

Trainers can use one or more learning methods to develop modules for specific topics. Sometimes emphasis can be on local or regional conditions and viable approaches, for example, to achieve sustainable watershed management. These modules would rely heavily on examples and case studies from the targeted region.

There are many ways to package modules depending upon the training purpose, the audience, and time and resources available to conduct the training activity. The section, "**Designing the Training Activity**," discusses the use of modules and sessions for different training purposes and audiences.

PLANNING TRAINING ACTIVITIES

Conducting the Needs Assessment

Careful planning is essential for a successful training activity. Figure 1 illustrates a general planning process for training activities, regardless of their nature. The first step in planning a training activity is called a needs assessment. This step includes determining explicitly who needs training, for what purpose, and the type of activity that meets this purpose. This step is called a needs assessment. It assures that the training fills a critical gap in trainee knowledge or skills. In this step, think about what training needs exist and related knowledge trainees will bring to the training. Also think about the ways you expect trainees to apply the information after training. This step might include a brief analysis of the trainee work environment and incentives or constraints they might face when applying the training information.

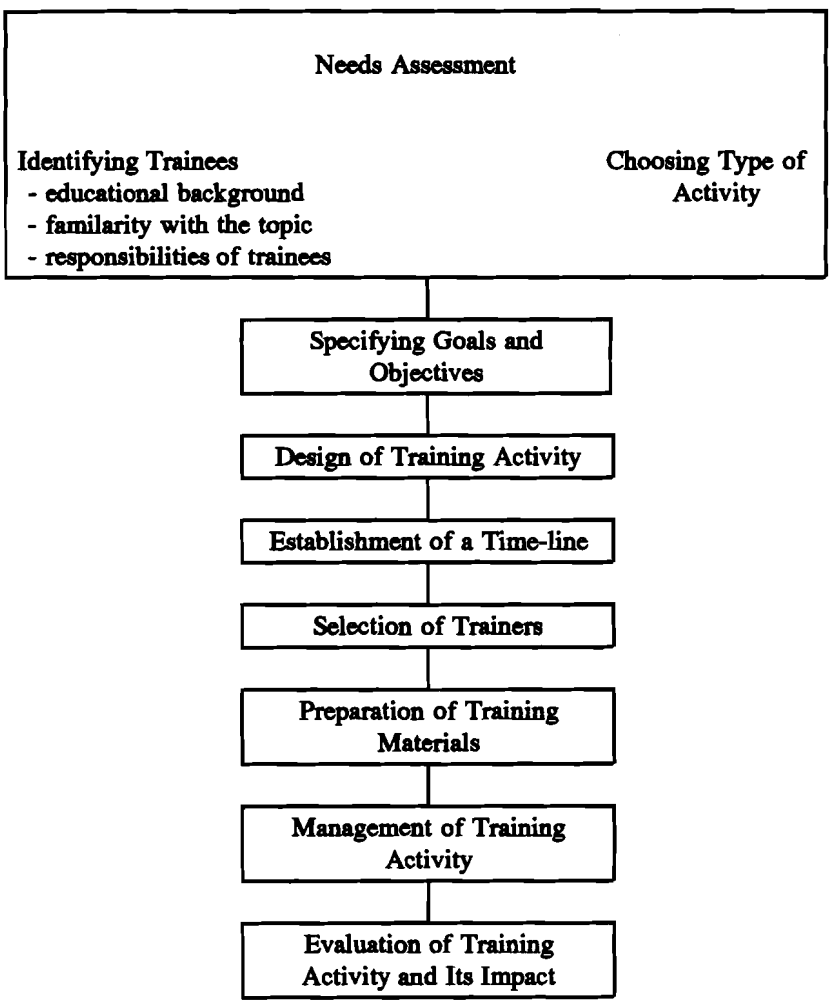

Figure 1. Process of planning training activities.

Specifying Goals and Objectives

After defining the trainee audience and completing the needs assessment, be sure to state specific goals and objectives. These help dictate who the participants should be and the most appropriate training activity for them. Of course, the trainees also help determine the type of activity. On the other hand, if you choose a particular training activity, such as a one-day conference or a two-week training course, the activity will determine, to a large extent, the kind of participants who will attend. The matrix in table 4 illustrates the relationships between training purposes, objectives, and levels of training appropriate for different audiences.

Table 4. Purpose of Training. This matrix helps relate training objectives, based on a needs assessment, to the level of target audiences (modified from Rogers and Shoemaker 1971).

INFORMATION NEEDS AND SKILL REQUIREMENTS**	LEVEL OF TARGET AUDIENCES*			
	STRATEGIC	TACTICAL	OPERATIONAL	TRAINERS
AWARENESS (provide information to promote awareness)				
INTEREST (provide facts and information to stimulate interest)				
UNDERSTANDING (provide knowledge so that facts and information can be understood)				
ADAPTATION AND TRIAL (provide training and practice to enable participants to acquire skills in how to do something)				
—Cross-over Threshold —				
ADOPTION AND IMPLEMENTATION (promote use of training information)				

* Strategic-level = policy makers, planners at the national level, senior administrators, etc. Tactical-level = policy implementors, project planners and managers. Operational-level = agricultural and forestry officers, extension workers, etc. Trainers = those who would use the training to conduct their own training activities, for example, agency and university personnel.

** The items listed show not only the purpose but also the participants' level of understanding about the training subjects. Also, training should consider where to start in terms of trainees' level of understanding and where to be at the end of the training activity.

You can use the matrix in table 4 to formulate the objective and scope of the intended training. For example, the objective of a one-day conference might be to stimulate awareness in high governmental officials and decisionmakers. This would move them from a position of little knowledge to one of understanding. With operational personnel, the training purpose may build upon their understanding of a problem and provide them with technical skills to carry out field

solutions (adaptation and trial). Trainees usually have a broad range of backgrounds and levels of understanding. In such cases, examine the participants' backgrounds and diversity and then adapt the training to benefit everyone. In some cases, multiple training activities may be appropriate.

The *cross-over threshold* in table 4 represents the trainee change from knowing how to do something to the point that they widely adopt and implement the training topics. However, not all training activities can take trainees over this threshold.

Designing the Training Activity

After making the needs assessment and clearly identifying the trainees and training purpose, you must identify and tailor the types of training activities, component modules, and sessions to meet the training objectives. Then schedule the various components. Listed below are examples of modules and sessions for different purposes and trainees:

Conference Courses

Purpose — To make high-level decision makers aware of the economic, environmental, and social benefits of watershed management and forestry for sustainable development. To promote incorporation of forestry and watershed management concepts and practices into projects and programs that improve production and environmental protection.

Trainees — Decision makers, planners, and other people who allocate resources to projects and programs.

Content — Present concepts, principles, and methods of achieving sustainable development, their economic and social implications, and the costs of unsustainable projects or programs. Present a few key lectures on the role of forestry and the importance of watershed management in sustainable development and blend them with good examples and case studies that *demonstrate* importance. A product from this course should include a group consensus: a set of key points showing the importance, the planning elements and necessary approach, *means* of implementing the project, and ways to deal with institutional and organizational barriers.

Format — This training activity would be a short (2- to 3-day) course organized to promote interaction among trainees and trainers. A regional or international course (with a focus like drylands, humid tropics, etc.) would be desirable. The typical format could be:

Day 1 Presenting key concepts and principles, with case studies and representative examples of the region/climatic type provided by invited speakers and trainees.

Day 2 Panel discussions with predetermined topics and a specific set of objectives given to trainees before they arrive for the course.

Day 3 Working groups combine their conclusions and recommendations to present to the entire group. The session would allow sufficient discussion time after each group's presentation.

Training Courses for Mid-level Managers[1]

Purpose — To provide trainees with the background and technical information to promote better planning and more sustainable projects and programs in forestry, watershed management, and related natural resource management.

Trainees — Mid-level professionals who are managers and planners involved with developing projects and programs in natural resources (forestry, watershed rehabilitation, water resource development, agriculture, range management, etc.).

Content — The concepts, principles, methods, and techniques of watershed management planning and implementation would be the focus. You could pattern each course by using the appropriate mix of modules, and a training manual assembled to match the presentations (see outline of training course on "The Role of Forestry in Sustainable Development of Dryland Regions" in appendix 2).

Format — The pattern would be similar to many of UNESCO's Man and the Biosphere (MAB) programs and FAO training courses (see outline of training course on "Forestry and Watershed Management in Arid and Semiarid Zones of the SADCC Countries" in appendix 3). They would normally be two weeks long and involve lectures, field trips, and workshop exercises. Depending on schedules, distances to field sites, etc., the format would be:

Week 1 Background lectures on concepts, principles, watershed management methods, planning methods, sustainability concepts, and the associated social, economic and political issues.

Week 2 Field trips and examples, presentations by local trainees and local resource managers and planners, workshops and exercises, wrap-up session with discussions by trainers and trainees.[2]

Technical Training Courses

Purpose — To provide technical background in watershed management and basic skills and methodology to analyze watershed problems and develop solutions.

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[1]The same general content and format presented here also could be used to provide a "training course for trainers" only greater emphasis would be placed on techniques such as methods of measurement and analysis.

[2]Two approaches for workshops and exercises can be used.
(1) Trainees would be required to bring with them examples or case studies that will be presented early in the course; these examples should focus on existing or planned projects or programs that relate in some way to watershed management.
(2) Trainees would be assigned to groups after the course begins; each group would be given an assignment–such as to develop a project or management plan for a particular situation that would be visited in the field. Adequate background documentation would be needed prior to the field trip. Groups then would present their plans at the end of the course; time for discussion of these plans would be provided.

Trainees — Natural resource managers, researchers, and educators who have not had any formal training in forestry or watershed management but who will be working with natural resource development projects and programs.

Content — Basic instruction in forestry or hydrology and watershed management with related topics (see outline of training course on "Resource Development of Watershed Lands" in appendix 4).

Format — Usually from three to six weeks with a mix of classroom lectures, problem-solving exercises, and field trips. You can design such courses to provide graduate credit for students.

Roving Seminars

Purpose — To provide specialized training at needed locations.

Trainees — Tailored to different groups but usually appropriate for managers, planners, and technicians involved with planning, designing, and implementing projects.

Content — Each would include specific topics to address group needs.

Format — Two or three lecturers, with the appropriate background and experience would travel to a location to address an audience of 20 to 30 trainees during two or three days. You could present more than one of these in a particular region to minimize the cost of each seminar (see the outline of the "Roving Seminar on Watershed Research and Management Practices" in appendix 5).

Study Tours

Purpose — To provide specialized training and "hands on" experience in research and implementing and monitoring projects.

Trainees — Project managers and field technicians involved in projects or research activities.

Content — Instruction on instrumentation, design of monitoring programs, research project design, and implementation of rehabilitation or protection activities in the field.

Format — Trainees would receive one or more lectures before going to the field. Trainee groups would then travel to various project and research sites to get instruction and observe others carrying out activities. Such a tour usually consists of several stops of a few days each, for a two- to three-week period (see outline of study tour on "Watershed Instrumentation, Design, Data Monitoring and Analysis" in appendix 6).

Establishing a Time-line

At this point in the training planning process, prepare a time-line showing when you'll attain specific *milestones*. This will ensure training success in a timely, efficient manner. Not only is a time-line a schedule of uncompleted tasks, but it is also a *vehicle* to coordinate people involved with planning, designing, and conducting the training.

Table 5 presents a time-line for a hypothetical training course. This example assumes the training course will be regional, involving trainees from the host and neighboring countries. However, the initiative to conduct the training course originated in the USA. The example assumes, therefore, that selected trainers from both the region and the USA will present sessions. This will require good coordination among the trainers. More than one sponsor has agreed to support the training course, which means you'll need to coordinate budget preparation among sponsors and organizers.

Table 5. Time-line for a hypothetical regional training course after the needs assessment has been made. In this example, trainers from the USA and some other region in the world are to conduct the training activity.

Lead Time	Task
9 months	Draft training outline and tentative schedule sent from the USA to host country for review and suggested modification
8 months	Draft announcement of regional training course sent from USA to host country for final preparation
6 months	Final budget for regional training prepared, indicating items in budget, costs of items, who will pay for items
6 months	Formal announcement of regional training course sent from host country to designated countries, and agencies and individuals within the countries
5 months	Regional trainers selected and notified of specific sessions and modules to be presented; the regional trainers asked to prepare specific chapters for training manual
3 months	Trainees selected and notified
2 months	Chapters for training manual prepared by regional trainers sent to host country
3 weeks	Chapters for training manual prepared by trainers from USA sent to host country; training manual assembled and copied
1 week	Trainers from the USA and region arrive in the host country; final arrangements for regional training course made
2-3 days	Trainees arrive in host country
0	Regional training course begins

Selection of Trainers

A critical and often more difficult task in planning and designing training is the selection of appropriate trainers. Individuals selected as trainers must possess required background and experience to meet the challenges in offering the training activity. This paper presents only general considerations for this selection process. The detailed specifications largely depend on

the needs of the sponsors, organizers, and others responsible for the training activity in question. General considerations for selecting trainers include:

- technical expertise;
- familiarity with the geographical, cultural, and political region;
- appropriate language capabilities;
- necessary presentation skills, specifically at the level of the planned training activity;
- availability for the preparation time and presentations at the training activity; and
- ability to become part of a team-taught effort.

Preparation of Training Materials

Preparing necessary training materials also is a critical task. Training materials must be technically correct, pertinent to reflect the region, and be in the language and at the educational and skill level of the trainees. Training materials can include a training guide, a training manual, case studies and examples, problem-solving exercises, instructions for games and simulations, demonstration descriptions, software, and field trip itineraries. In most instances, regardless of the type of training, you need to prepare both a training guide and a training manual.

Training Guide

A *training guide* specifies the set of modules and sessions presented in the training activity. Each module will contain one or more sessions to cover in the allotted time through lectures, lecture-discussions, and other learning methods. If desired, training guides can also include opening and closing sessions, laboratory exercises, and field trip itineraries.

The primary reason for preparing a training guide is to provide a basic structure for the training. It is particularly useful as a guide for trainers and trainees in a "training course for trainers." An example of the content of a training guide is included in appendix 7 for the training course on "The Role of Forestry in Sustainable Development of Dryland Regions."

Training Manual

The modules and sessions presented in a training guide then become chapters in a *training manual*, often the primary *reference material* provided to trainees. It is the *textbook* that complements the lectures, lecture-discussions, and other learning methods employed in the training. Be sure to prepare the training manual in a format and language appropriate for trainee skill-levels.

You can give a complete training manual to the trainees at the beginning of the training activity. Or you can use a *loose-leaf notebook* format and give it to the trainees chapter by chapter. Or you can use a combination of the two options. Appendix 8 includes an outline of the training manual for the course on "The Role of Forestry in Sustainable Development of Dryland Regions."

Managing a Training Activity

Choosing a Manager

Successful training requires efficient management. A poorly managed training activity, with confusion and delays, can ruin the experience for everyone. It is important to appoint a training manager with authority to do the job. A manager should have good organizational skills and technical knowledge of the subject. Depending on the nature of the training and the number of people involved, the manager may need to prepare a detailed organizational chart. Regardless of the number of positions, tasks, and people on the chart, only one person should act as training activity manager.

Everyone needs to understand the specific tasks and responsibilities assigned to the manager. The tasks will vary with the type of training, the venue, and the responsibility to the sponsors. The manager is responsible for all necessary travel, logistical, and support arrangements. The manager also makes sure clerical help is available, and a fiscal officer is accessible throughout the training activity. It is usually impossible to foresee all the *problems* that might face the manager of a specific training activity. However, some keys to a well-managed training activity are clear objectives and knowledge of available physical, fiscal, and human resources. A contingency plan to meet a myriad of needs, problems, and circumstances also helps manage training activities.

Budget Items

Early in the planning process, consult with sponsors, organizers, and the training manager to prepare a detailed budget. After sponsoring parties prepare and approve the budget, it becomes a financial *blueprint* for training management. Table 6 presents common budget items to consider when planning and designing training. After identifying the budget items, get cost estimates for each item.

Table 6. Budget items in planning and designing a training activity.

Trainees: Travel Lodging and Food Laundry Allowances Other Expenses	Trainers: Preparation Time Travel Lodging and Food Allowance Honoraria	Support Staff: Clerical Assistance Audiovisual Operator Drivers Registration Staff
Facilities: Classrooms Equipment Allowance Audiovisual Blackboards Flipcharts	Materials: Training Guides Training Manuals Supporting Publications Writing Materials Paper Pencils and Pens Transparencies	Transportation: Local Field Trips
Training Activity Management: Clerical Responsible Fiscal Officer		

Equipment, Materials, Other Needs

The training manger is responsible for getting equipment and satisfying other needs. The manager can do some preparation ahead of time but needs to be ready to respond to needs throughout the training period. Table 7 includes a *checklist* of some of these needs.

Table 7. Sample checklist of equipment and other needs.

Administrative Needs: Typewriter Miscellaneous Paper Pencils and Pens Stapler and Paper Clips Scotch and Masking Tape Scissors Flip Chart Marking Pens Copy Machine	Classroom Needs: Slide Projector Overhead Projector Screen Chalk Board Flip Chart Tables, Chairs Miscellaneous Extension Cords Extra Bulbs Electrical Converter Chalk and Eraser Pens (Assorted Colors) Masking Tape	Field Trip Needs: Map of Site Location First Aid Kit Water Matches Vehicle Spare Tires Jumper Cables Extra Fan Belt Wrenches, Screw Drivers, etc. Flashlight Flare Fire Extinguisher Extra Gas and Oil Duct Tape Shovel Cable or Strong Rope
Things to Check: Location of Outlets Location of Light Switches	Miscellaneous Needs: Food and Drinks for breaks and lunches for field trips Bathroom facilities	

Evaluating Training and Its Impact

It is important to evaluate a training activity and its subsequent impact as thoroughly as possible. Training evaluation:

- starts discussion among participants and trainers about appropriate follow-up: more training, networking, papers, studies, etc.;
- improves quality of future training through timely feedback to administrators and trainers by identifying areas of strength and weakness;
- insures that training focuses on recognized trainee needs and that trainees gain skills appropriate to their work situations and needs;
- increases communication between sponsors and other supporters about training quality and trainee satisfaction;
- collects and uses evaluation information gathered when making decisions about scheduling, changing, or dropping specific training activities.

Evaluation scheduling depends mostly on the type of training, length of session, sponsors' requirements, and how the evaluation process will satisfy the stated purpose. You can schedule evaluations at:

- daily or weekly intervals to provide immediate insight into training effectiveness. This can help you adjust the content and method to better fit trainee needs;

- the midpoint of training to see if you are satisfying trainee needs, to allow trainees to reevaluate their needs, and to get feedback to adjust content and methods for the rest of the course;

- the end of the training to provide an overall content assessment and training evaluation to see if you have met the needs of trainees, sponsors, and other supporters. Final evaluation can also help you design future training;

- six to twelve months after completing the training to see if trainees still find it relevant once they incorporate new skills and knowledge into their work. This also sets up a mechanism for staying in contact with the trainees.

Appendix 9 shows examples of evaluation forms, with the types of questions to ask trainees. It is important to summarize, analyze, and distribute evaluations to the appropriate parties quickly to get the most from the evaluation process.

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APPENDIX 1

TRAINING COURSE SESSIONS[3]

Each session can have course outlines and syllabus materials that are packaged to meet specific purposes of a training course. One or more sessions can be grouped into modules to achieve training objectives.

General Topic Courses

Concepts and Principles of Watershed Management
Role of Forestry in Sustainable Development
Planning Concepts and Principles
The Planning Process
Problem Analysis and Definition of Objectives
Institutional Considerations in Design
Project Design
Appraisal of Alternatives
Design of Implementation Plan
Monitoring and Evaluation
Presenting a Proposed Plan and Its Appraisal
Involvement of Local People in Forestry
Forestry Extension Programs
Special Considerations in Planning Forestry Projects
Social Forestry

Specific Topic Courses

The Hydrologic Cycle
Hydrologic Methods
Inventory Techniques:
- Precipitation
- Streamflow
- Water Quality
- Timber, Range and Wildlife

Remote Sensing
Vegetative Management and Water Yield
Erosion Processes and Control
Gully Erosion and Control
Watershed Protection and Rehabilitation Measures
Water Quality
Water Harvesting

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[3]The materials for the listed training sessions were developed by Dr. Peter F. Ffolliott, School of Renewable Natural Resources, University of Arizona, and Drs. Kenneth N. Brooks, Hans M. Gregersen and Allen L. Lundgren, Department of Forest Resources, University of Minnesota.

Groundwater
Reservoir Management
Economics of Watershed Management
Institutional Considerations of Watershed Management
Multiple Use - Concepts and Role in Watershed Management
Dryland Systems:
Agroforestry Practices
Characteristics of Dryland Environments
Nursery Operations in Dryland Regions
Establishment and Management of Forest Plantations in Dryland Regions
Windbreak and Shelterbelt Plantings
Water Utilization and Conservation Measures
Grazing Land Management
Fuelwood Management

Humid Tropical Systems:
Characteristics of Humid Tropical Environments
Hydrologic Processes & Characteristics of Watersheds in the Humid Tropics
Watershed Management in the ASEAN Region

Case Studies/Examples

Economic Appraisal of a Watershed Project - The Loukkos Basin, Morocco
Majjia Valley Reforestation Project, Niger, West Africa
Beaver Creek Multiple Use Project, Arizona, USA

APPENDIX 2

Example - Middle Management Course
Amman, Jordan Training Course

Role of Forestry in Sustainable Development of Dryland Regions

Day 1

Time	Session
1000	Opening
	Orientation to the course
1030	Morning tea
1100	Overview of forestry in the world
1230	Lunch
1400	Characteristics of dryland environments
1500	Role of forestry in sustainable development of dryland ecosystems

Day 2

0830	Silvicultural practices
0930	Morning tea
1000	Film on afforestation activities in Jordan
1100	Forest inventory techniques
1230	Lunch
1400	Practice session

Day 3

0830	Establishment and management of forest plantations
1000	Morning tea
1030	Continuation of the session
1230	Lunch
1400	Field trip to the botanic garden in Shafabadran

Day 4

0830	Wildlife management
1000	Morning tea
1030	Erosion processes and control practices - Water
1230	Lunch
1400	Wind

Day 5

0830	Water conservation measures (case study: Zerqa river basin)
1000	Morning tea
1030	Selection of tree species for arid zones
1230	Lunch
1400	Development of forest management plans

Day 6

0830	Field trip

Day 7

No class

Day 8

0830	Watershed management
1000	Morning tea
1030	Effects of site factors on afforestation
1230	Lunch
1400	Grazing land management

Day 9

0830	Agroforestry practices
1000	Morning tea
1030	Management for nonwoody forest products
1230	Lunch
1400	Fuelwood management

Day 10

0830	Field Trip

Day 11

0830	Involvement of people in forestry
1000	Morning tea
1030	Continuation of the session
1230	Lunch
1400	Economic appraisals of dryland forest management practices and programs

Day 12

0830	Planning for sustainable forest development in dryland ecosystems
1000	Morning tea
1030	Continuation of the session
1230	Lunch
1400	Review of course

Closing

APPENDIX 3

Example - FAO Sponsored Middle Management Level Workshop Lesotho

Forestry and Watershed Management in Arid and Semi-arid Zones of the SADCC Countries

1. Introduction

1.1 *Background and Scope*

During a consultative meeting in Harare, Zimbabwe, in July-August 1984, the SADCC countries[4] identified watershed management related problems within their subregion. Urgent issues identified include accelerated soil erosion, overgrazing and excessive fuelwood cutting, resulting in land degradation and low crop yields, siltation of waterways and reservoirs, reduced hydroelectric power generation and less water available for irrigation and domestic use downstream.

The consultation meeting authorized Lesotho as the SADCC Coordinator in Soil and Water Conservation and Land Utilization to approach FAO and request support for a Workshop on Watershed Management in the Arid and Semi-Arid Zones of the SADCC countries.

In response to this request a preparatory meeting was convened in November 1984 under the FAO Regular Programme Element "Monitoring and Propagation of Watershed Management in Africa." The meeting was attended by resource persons from the Forest Resources Division, FAO, the Division of Conservation and Forestry, Lesotho; the SADCC Coordination Unit, Ministry of Agriculture and Marketing, Lesotho; the HADO Project, Tanzania; and Agritex, Zimbabwe. The meeting agreed on a tentative outline for the Workshop and recommended that the preparations for the Workshop should include the following steps:

(i) A fact-finding mission resulting in a state-of-the-art report on watershed management in the SADCC countries.

(ii) Identification of national institutions and focal points as well as prospective participants.

(iii) Preparation of country statements to be brought to the Workshop.

(iv) Preparation of draft project proposals to be presented and appraised in the Workshop.

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[4]The nine member countries of the Southern African Development Coordination Conference (SADCC) are: Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe.

Based on this preparatory meeting, a request was formulated and presented to the Government of Finland, resulting in the agreement to finance the Workshop under a trust fund project GCP/RAF/216/FIN, FAO/Finland Workshop on Watershed Management in Arid and Semi-Arid Zones of SADCC Countries. The Government of Finland, through the Forestry Training Programme (FTP) furthermore agreed to sponsor a three-man fact-finding mission jointly with the FAO Regular Programme. This mission took place in September-October 1985 and produced the following results:[5]

- An overview of watershed related problems in the SADCC countries
- Institutions and technical personnel identified and informed about the forthcoming Workshop
- A detailed programme proposal for the Workshop and suggestions on resource persons for specific topics.

The fact-finding mission greatly contributed to attaining the eventual participation of eight of the nine SADCC countries and Ethiopia because of the experiences which this latter country has to offer on the rehabilitation of semiarid lands.

1.2 *Objectives*

The main objectives of the Workshop were to:

- Complement and reinforce ongoing efforts of forestry and watershed management activities in the SADCC countries by up-to-date knowledge relevant to integrated catchment management for the optimum and sustainable use of land and water resources.

- Promote and encourage the exchange of information and experiences between the countries of the subregion and to encourage the introduction of forestry and watershed management programmes as well as integrated land use planning through a TCDC approach.

- To provide an opportunity for the presentation and appraisal of national project proposals and ideas in watershed management.

2. Organization and Development of the Workshop

2.1 *Opening Ceremony*

Due to other major official events taking place in Lesotho on the first day of the Workshop, the opening ceremony was divided into two parts: a technical level opening on Monday, 7 April, at 10:00 hours and an official opening on Thursday, 10 April at 12:00 hours. The speakers were listed for each.

[5]FTP/FAO Preparatory Mission Report. Forestry Training Programme (FTP) National Board of Vocational Education, Helsinki, 1985.

Day 1: Opening ceremony

Day 4: Official opening

2.2 *General Outline of the Workshop and the Topics Discussed*

The Workshop was divided into four main parts as follows:

(i) Country presentations. These were presented by each country and contributed to the identification of watershed related issues in individual SADCC member countries and of common problems and experiences.

(ii) Introduction of specific topics by resource persons. These gave an up-to-date orientation concerning the issues involved as well as the proposed strategies in integrated management of watershed resources. Topics included: desertification, socioeconomic aspects; hydrological effects of modification of vegetation; agroecological zoning; land use planning; land suitability classification; environmental impact assessment; economic analysis and financing; methodology for project formulation; range management and livestock; forest management; conservation farming; agroforestry; wildlife management and conservation; socioeconomic aspects of project implementation; institutional aspects.

(iii) A field exercise. This was carried out during a visit to the SIDA assisted Farm Improvement and Soil Conservation Project in Mohale's Hoek district in the southern semiarid part of Lesotho. The five working groups worked out a strategy for the integrated resource management of a 1200 ha catchment at Maphutseng. The recommendations of the working groups were then presented to the project staff in a meeting at the Mohale's Hoek Farmers' Training Centre. The field trip also included visits to the Lesotho Woodlot Project nursery in Mohale's Hoek as well as the nearby nursery of the Conservation Division and the community nursery at Ha Gideone about 25 km south of Maseru.

(iv) Project design and presentation. During this exercise project proposals and ideas brought to the Workshop by the participants of the nine countries were discussed in the working groups and the results presented for further comments and suggestions in plenary sessions.

Other matters. One afternoon session and one morning session were allocated to discussing future collaboration on watershed management among SADCC countries and to formulating conclusions and recommendations. The discussion on a future programme of work concentrated mainly on matters of procedure and on how the SADCC coordination might become a more effective and expedient clearinghouse for project presentation and financing. The participants agreed to constitute an informal technical network on matters related to watershed management.

2.3 *Conclusions and Recommendations*

1. Natural resource management in watersheds should consider the interaction between forest, crops, livestock and wildlife resources in their social and economic context, with due consideration to upstream and downstream relationships.

2. At present, institutions, both at national and SADCC level, are sectorial. In order to implement watershed management a coordinated effort is a prerequisite.

3. Watershed management should include not only densely populated areas, but include management of, and investment in, protected areas.

4. Planning needs to be carried out on a catchment by catchment basis. Implementation should be decentralized and seek to accommodate the conflict between watershed and administrative/village boundaries.

5. There is a need to quantify the problems and demonstrate the effects of watershed management to policy and decision makers as well as to the general public.

6. There is a need to strengthen the regular programmes of government agencies and make these less dependent on project financing. Institutional strengthening should include training and manpower development and an orientation towards programmes of peoples' participation.

7. Countries sharing international watersheds should establish a mechanism of mutual consultations on these matters.

8. There is a need for an exchange of information and expertise on environmental impact assessment of watershed projects in the SADCC region.

9. Legislation should be generally more development oriented, with provision for punitive action where the interests of communities need to be protected. No legislation should be enacted which cannot be enforced.

10. The funds available in the SADCC cooperation for manpower development should be used among other things to finance the training of research personnel and to make research results available for training programmes in order to make these more relevant.

11. The format used during the Workshop for project formulation is useful and it is hoped that, gradually, a more uniform and effective procedure for project formulation and presentation will be developed within SADCC.

12. The participants of the Workshop will constitute an informal network in watershed management in the SADCC region. The SADCC Coordination Unit in Lesotho should publish a summary report of the Workshop in its next newsletter.

2.4 *Closing Ceremony*

GENERAL OUTLINE OF THE WORKSHOP

1. **Watershed problems: Identification and analysis**
   - 1.1 Watershed problems in SADCC countries
   - 1.2 Desertification, its impact on socioeconomic development

2. **Watershed behaviour**
   - 2.1 Hydrological effects of modification of vegetation

3. **Watershed management planning**
   - 3.1 Agroecological zoning
   - 3.2 Land-use planning, land suitability classification
   - 3.3 Environmental impact assessment
   - 3.4 Economic analysis and financing of watershed projects

4. **Watershed management techniques**
   - 4.1 Rangeland management and livestock production
   - 4.2 Forest management: indigenous forest, plantation forestry
   - 4.3 Conservation farming
   - 4.4 Agroforestry
   - 4.5 Wildlife management and conservation

5. **Project implementation**
   - 5.1 Socioeconomic aspects, role of local communities
   - 5.2 Institutional and policy aspects, extension organization
   - 5.3 Summary of procedures

6. **Country reports on watershed management** (presented by delegations)

6.1	Lesotho	6.5	Mozambique
6.2	Botswana	6.6	Swaziland
6.3	Ethiopia	6.7	Tanzania
6.4	Malawi	6.8	Zambia
		6.9	Zimbabwe

7. **Project proposals** (presented after group exercises)

7.1	Lesotho	7.5	Swaziland
7.2	Zimbabwe	7.6	Mozambique
7.3	Zambia	7.7	Malawi
7.4	Tanzania	7.8	Botswana
		7.9	Ethiopia

8. **SADCC cooperation in watershed management**: Panel discussion

9. **Watershed management in Lesotho**: Field excursions

PROGRAM

Day 1

0900 Registration of participants and distribution of documents
1000 Opening ceremony
1100 Coffee break
1130 Watershed problems in SADCC countries (including projection of filmstrip: Integrated Watershed Management)
1215 Instructions on working procedures
1230 Lunch break
1400 Country reports
1530 Coffee break
1545 Country reports
1730 End of day's session

Day 2

0830 Desertification, socioeconomic impacts
0915 Country reports
1030 Coffee break
1045 Country reports
1230 Lunch break
1400 Country reports
1530 Coffee break
1545 Country reports
1830 End of day's session

Day 3

0830 Hydrological effects of modification of vegetation
1000 Coffee break
1015 Agroecological zoning
1100 Land use planning; land suitability classification
1145 Environmental impact assessment
1230 Lunch break
1400 Economic analysis and financing
1530 Coffee break
1545 Methodology for project formulation
1730 End of day's session

Day 4

0830 Range management, livestock
0930 Forest management
1015 Coffee break
1030 Conservation farming
1130 Agroforestry
1230 Lunch break
1400 Wildlife management and conservation (Panel discussion)
1630 Country reports

1800 Introduction to group work
1830 End of day's session

Day 5
(Morning: free programme)
1300 Departure for two-day field excursion

Day 6
Field excursion continues

Day 7
1600 End of field excursion

Day 8
0830 Socioeconomic aspects (filmstrip: People who participate)
0930 Institutional aspects
1015 Coffee break
1030 Introduction to group work
1230 Lunch break
1400 Group work on project proposals
1500 Coffee break
1515 Group work on project proposals
1800 End of day's session

Day 9
0830 Group work on project proposals
1000 Coffee break
1015 Group work on project proposals
1230 Lunch break
1400 Group work on project proposals
1500 Coffee break
1515 Project proposal presentations
1800 End of day's session

Day 10
0900 Project proposal presentation
1030 Coffee break
1045 Project proposal presentation
1230 Lunch break
1400 Project proposal presentation
1530 Coffee break
1545 Project proposal presentation
1715 End of day's session

Day 11

0900 Project proposal presentation
1030 Coffee break
1045 Project proposal presentation
1215 Lunch break
1330 Project proposal presentation
1500 Coffee break
1515 Panel discussion: SADCC cooperation in watershed management
1800 End of day's session

Day 12

0800 Formulation of conclusions and recommendations
1000 Closing ceremony
1030 End of Workshop sessions

APPENDIX 4

Example of Training Schedule

USDA Technical Short Course
Resource Development of Watershed Lands

Day 1

Morning	Welcome
	Introductions
	Orientation
	Goals, objectives, contents of course
	Campus and local facilities
	Arrangements
Afternoon	Tour of campus and local facilities
Evening	Welcoming party

Day 2

Morning	In-country watershed problems
	Preparation of case studies
	Case study: Watershed management in Morocco
Afternoon	Integrated management and sustainable development
	Sustainable development
	Integrated management
	Watershed planning unit

Day 3

Morning	Basic hydrologic processes
	Precipitation and interception
	Problem session
Afternoon	Basic hydrologic processes (continued)
	Evapotranspiration and soil water
	Infiltration, runoff, streamflow
	Problem session

Day 4

Morning	Principles of erosion
	Erosion processes
	Prediction of soil loss
	Erosion control measures
Afternoon	Principles of erosion (continued)
	Gully formation and control
	Sedimentation

Day 5

All day — Field trip to Walnut Gulch watersheds
- Streamflow measurements
- Hydrologic effects of land use practices
- Arid zone hydrology

Days 6 & 7

Free days

Day 8

Morning — Soil and water conservation methods
- Mechanical and cultural methods of soil conservation
- Water harvesting and water spreading methods
- Water storage

Afternoon — Field trip to Page Ranch
- Small-scale water development
- Water harvesting
- Runoff agriculture

Day 9

Morning — Plant-water relations
- Energy relationships
- Plant water requirements and consumptive use
- Evapotranspiration estimates

Afternoon — Field trip to Environmental Research Laboratory
- Environmental control systems
- Agricultural production studies
- Water conservation measures

Day 10

Morning — Water quality
- Physical characteristics
- Dissolved chemical constituents
- Bacteriological quality

Afternoon — Water quality (continued)
- Problem session

Day 11

Morning — Field trip to Atterbury watersheds
- Streamflow measurements
- Hydrologic effects of land use practices
- Urban watershed management

Afternoon — Status of preparation of case studies
- Case study: Majjia Valley in Niger

Day 12

All day — Open University session
- Science-Engineering Library
- Computer Center
- Tree Ring Laboratory
- Other

Day 13

Optional field trip to the Sonoran Desert Museum

Day 14

Free day

Day 15

Morning — Range management
- Ecological relationships
- Rangeland evaluations
- Livestock grazing systems

Afternoon — Range management (continued)
- Problem session

Day 16

All day — Field trip to Santa Rita Experimental Range
- Demonstration of range evaluation techniques
- Livestock grazing systems
- Rangeland improvement techniques

Day 17

Morning — Forest management
- Ecological relationships
- Forest inventory techniques
- Forest management practices

Afternoon — Forest management (continued)
- Problem session

Day 18

Morning — Small-scale agricultural production practices
- Planning for sustainable agriculture
- Soil, water, pest management
  - Agroforestry practices
- Multiple use management
  - Concepts of multiple use
  - Land management considerations
  - Policy formulations

Afternoon — Multiple use management (continued)
- Case study: Beaver Creek Watersheds in Arizona

Day 19

Morning Economic appraisal of resource development programs
- Framework for appraisal
- Data requirements
- Sensitivity analysis

Afternoon Orientation to field trip
- Mid-course evaluation

Day 20

Optional field trip to Kitt Peak Observatory

Day 21

Free day

Days 22-26

Field trip Visit flood control district, experimental watersheds, irrigation and water control project

Days 27 & 28

Free days

Day 29

Morning Review of field trip

Afternoon Case studies

Day 30

Morning Groundwater management
- Storage and movement of ground water
- Groundwater development
- Groundwater quality

Afternoon Groundwater management (continued)
- Problem session

Day 31

Free day Group picnic

Day 32

Morning Institutional considerations in resource development
- Political feasibility evaluations
- Operational analysis
- Financial considerations

Afternoon Policy considerations (continued)
- Problem session

Day 33

Morning Participatory project design
- Design processes
- Steps in collaborative style of planning
- Application techniques

Afternoon Participatory project design (continued)
- Problem session

Days 34 & 35

Free days

Day 36

Morning Simulation techniques
- Role in resource development
- Computer simulation models
- Problem session

Allocation of resources and decision-making
- Allocation techniques
- Data requirements
- Choice criteria

Afternoon Monitoring and evaluation

Day 37

Morning Remote sensing techniques
- Importance of remotely sensed data sets
- Remote sensing formats
- Mapping applications
- Interpretations of land use patterns

Afternoon Remote sensing techniques (continued)
- Problem session

Day 38

All day Presentation of case studies
- Critique of case studies

Day 39

Morning Developmental planning and the environment
- General planning considerations
- Alternative methodologies
- Application techniques

Afternoon Developmental planning and the environment (continued)
- Problem session

Day 40

Morning Course review
- Final evaluation
- Closing ceremony

APPENDIX 5

Example:
Roving Seminar on Watershed Research and Management Practices

Roving Seminar ASEAN-US Watershed Project
College, Laguna, Philippines

Philippines: 13-16 August 1986
Institute of Forest Conservation
UPLB, College, Laguna

Thailand: 20-23 August 1986
Kosa Hotel
Khon Khaen Province
Northeastern Thailand

Indonesia: 26-29 August 1986
Solo City, West Java
Indonesia

Malaysia: 2-5 September 1986
Universiti Pertanian Malaysia
Serdang, Selangor, Malaysia

Program of Activities[6]

Day 1

0800 Registration, IFC, Conference Hall, College, Laguna
0830 Opening program
0930 Break
1000 **Session 1 - Watershed management and research in ASEAN countries**
Land use evaluation/classification in ASEAN countries
1100 Applying research results to management programs-ASEAN experience
1200 Lunch
1330 Watershed management problems in ASEAN countries
1430 Watershed research programs in ASEAN countries
1530 Break
1545 Watershed research needs in ASEAN countries
1645 Open discussion

[6]This example is of the Philippine portion of the course; a similar program was conducted for the other three countries.

Day 2

0800 **Session 1 - Concepts of watershed management**
Watershed management concepts, principles, objectives

0900 The watershed as a planning/management unit

1000 Break

1015 **Session 3 - Watershed planning**
Identifying watershed problems/management objectives

1115 Data requirements for planning/decision making

1215 Lunch

1330 Watershed evaluation/assessment. Mathematical approaches to evaluation such as linear programming, goal programming, simulation

1530 Break

1545 Decision making in watershed management. Single objective plan, multiple use plan, integrated watershed management

1645 Land use evaluation/classification in the Philippines

Day 3

0800 **Session 1 - Watershed management and research in ASEAN countries** (continued)
Watershed management problems in the Philippines

0900 Watershed research programs in the Philippines

1000 Break

1015 **Session 4 - Monitoring and evaluation**
Monitoring watershed projects. Modifying objectives or treatments based on monitoring.

1115 Open discussion

1215 Lunch

1330 Quantifying soil loss/sedimentation on watersheds (direct measurement, USLE, other prediction techniques)

1430 ASEAN experience with soil loss estimate USLE, sediment measurements

1530 Break

1545 Microcomputers in watershed management. Data management/information system, software available

Day 4

0800 **Session 5 - Research in watershed management**
Research methods in watershed management

0900 Applying results from research watershed to management programs - U.S. experience

1000 Break

1015 New measurement methods/instruments for soil loss, sedimentation, streamflow

1115 Case studies in watershed management and research

1215 Lunch

1330 Case studies continue

1500 Break

1600 Closing program

APPENDIX 6

Example of Study Tour

ASEAN Watershed Management Study Tour
Watershed Instrumentation, Design, Data Monitoring and Analysis

University of Arizona - East-West Center

I. Purpose of study tour:

A. to observe the field application of watershed hydrometeorologic research;
B. to observe hydrometeorologic research designs, instrumentation, data monitoring and analyses; and
C. to learn the application of watershed hydrometeorologic research through on-site observations.

II. Schedule of activities:

Day 1
Participants arrive in Honolulu

Day 2
0830 Leave hotel for East-West Center
0845 Coffee
0900 Welcome
East-West Center
University of Arizona
Introductions
Announcements
0945 Overview of study tour
1000 Orientation for field trip
Field trip
1800 Reception

Day 3
0830 Leave hotel for East-West Center
0900 Hydrologic processes in watershed management
0945 Inventory and monitoring techniques - precipitation
1030 Break
1045 Inventory and monitoring techniques - streamflow
1130 Inventory and monitoring techniques - water quality
1215 Lunch
1330 Inventory and monitoring techniques - interception, evapotranspiration, infiltration and percolation
1415 Data processing techniques

1500 Break
1515 Strategies for soil and water conservation
1600 The watershed as a planning unit
1645 Discussion

Day 4
morning Leave Honolulu
afternoon Arrive in Phoenix, Arizona

Day 5
morning Travel to Prescott, Arizona
afternoon Visit to Battle Flat watersheds: Instrumentation for watershed studies

Day 6
morning Travel to Flagstaff, Arizona
afternoon Visit to hydrometeorologic sites: Siting of stream gauges and other instruments en route

Day 7
all day Visit to Beaver Creek watersheds: Paired watershed studies; instrumentation to evaluate management effects of streamflow

Day 8
all day Visit to Grand Canyon National Park

Day 9
morning Travel to Show Low, Arizona
afternoon Visit to Heber watersheds: High elevation zone - instrumented watersheds

Day 10
morning Travel to Springerville, Arizona
afternoon Visit to Castle Creek, Thomas Creek and Willow Creek watersheds

Day 11
morning Travel to Phoenix
afternoon Visit to hydrometeorologic sites en route

Day 12
all day Visit to Salt River hydropower and irrigation project
Travel to Tucson, Arizona

Day 13
all day Visit to Walnut Gulch watersheds, flumes and special instruments for highly variable streamflow areas

Day 14
free day

Day 15
free day

Day 16
0900 Data management systems
1000 Break
1030 Geographic information systems
1200 Lunch
1330 Computer simulation techniques
1500 Break
1530 Computer demonstration

Day 18
morning Visit to U.S. Weather Bureau Station
afternoon Visit to Climatological Station at the University of Arizona

Day 19
0900 Review of study tour
1000 Closing

Day 20
Participants depart from Tucson

APPENDIX 7

Example of Training Guide

The Role of Forestry in Sustainable Development of Dryland Regions

Preface

This training guide presents a set of modules and sessions which could be presented in a 10 day training course, excluding the opening and closing sessions, laboratory exercises, and field trip itineraries. Each module contains one or more sessions which can be covered in three to four hours of lecture-discussion. The primary objective of these modules is to provide a basic structure in which to present the most important aspects of the topic, in a style which should be understood by middle-level professionals who have been away from school for five years or more.

The modules and sessions can be used in any combination appropriate to meet specific needs of the participants in the training course. A set of questions or exercises is offered at the end of each module. These questions or exercises can lead to discussions, small group presentations, or provide a basis to think through problems and solutions in a new way. The exercises also can be assigned as work which can be done between sessions or classroom assignments to be completed at the end of the sessions in a module.

(The modules and sessions presented in this training guide subsequently became chapters in the training manual for the training course as illustrated in appendix 8).

Contents

Module 4: Sustainable Development Interventions

Session 1 - Water Utilization and Conservation Measures
Session 2 - Integrated Watershed Development
Session 3 - Grazing Land Management
Session 4 - Wildlife Management
Session 5 - Agroforestry Practices
Session 6 - Fuelwood Management

Module 5: Protection of Interventions

Session 1 - Erosion Processes and Control Practices
Session 2 - Shelterbelt and Windbreak Plantings

Module 6: Social Considerations in Sustainable Development

Session 1 - Involvement of Local People
Session 2 - Forestry Extension Programs

Module 7: Planning and Appraisal of Project Alternatives

Session 1 - Planning Concepts and Principles
Session 2 - Special Considerations in Planning Forestry Projects
Session 3 - Appraisal of Project Alternatives

APPENDIX 8

Example of Table of Contents for Training Manual

The Role of Forestry in Sustainable Development of Dryland Regions

Amman, Jordan

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

APPENDIX 9

Forms for Evaluating Training

9.1 Sample Evaluation Forms

I. Training Activities for Week of _____.

Rate the usefulness of each of the activities for this week.

	Not Useful		Moderately Useful		Very Useful
Activity 1:_____	1	2	3	4	5

Comments:_____

_____

Activity 2:_____	1	2	3	4	5

Comments:_____

_____

Activity 3:_____	1	2	3	4	5

Comments:_____

_____

Activity 4:_____	1	2	3	4	5

Comments:_____

_____

Activity 5:_____	1	2	3	4	5

Comments:_____

_____

II. Trainers

Write the name(s) of the trainers in the blanks provided and comment on the trainers effectiveness during this week.

Trainer's Name_____

Comments:_____

_____

_____

Trainer's Name_____

Comments:_____

_____

_____

Trainer's Name_____

Comments:_____

_____

_____

Trainer's Name_____

Comments:_____

_____

_____

III. Participation

A. Do you feel that you have participated in the training activities to the extent you wanted? Yes ( ) No ( )

B. Do you feel that other participants have had an equal opportunity to contribute to the training activities? Yes ( ) No ( )

IV. General Impression

A. How satisfied were you with this week of the training activity?

Not Satisfied		Moderately Satisfied		Very Satisfied
1	2	3	4	5

Comments:_____

_____

B. In the past week, what specific information or activities were most useful to you?

1. _____

2. _____

3. _____

C. List any specific difficulties or problems with the training activity so far and suggest how they might be corrected.

_____

_____

_____

9.2 Sample Midpoint Evaluation Form

I. Administration and Logistics

A. Indicate your satisfaction with the following arrangements at the location of the training activity.

	Satisfied		Not Satisfied		Extremely Satisfied
Housing Accommodations	1	2	3	4	5
Training Facilities	1	2	3	4	5
Transportation	1	2	3	4	5

B. What changes, if any, should be made in the above arrangements?

_____

_____

_____

_____

II. Content of the Training Activity

A. Indicate your achievement of each of the training activity objectives listed below. (Objectives inserted by trainers)

	Not Achieved		Partially Achieved		Fully Achieved
Objective 1:	1	2	3	4	5
Objective 2:	1	2	3	4	5
Objective 3:	1	2	3	4	5

B. The general level of presentation of the topics was too simple____, too complex____, or about right____.

C. At this point in the training activity, should the overall objectives of the training activity, as stated at the beginning of the training activity, be modified to meet your specific needs? Yes ( ) No ( )
If yes, what modifications should be made?

_____

_____

_____

_____

III. Overall Training Activity Satisfaction

A. Rate your overall satisfaction with this training activity to this point.

Not Satisfied		Satisfied		Extremely Satisfied
1	2	3	4	5

B. List any specific difficulties or problems with the training activity to this point and suggest how they might be corrected.

_____

_____

_____

9.3 Sample Final Evaluation Form

I. Pre-Training Activity Information

A. How did you learn about the training activity?

_____

_____

B. From the information on the training activity that you received, how clear were the training activity objectives?

Very Clear		Clear		Unclear
1	2	3	4	5

C. In what ways did the training activity differ from what you expected?

_____

_____

_____

II. Orientation

A. How helpful was the orientation at your place of work?

Not Helpful		Helpful		Extremely Helpful
1	2	3	4	5

B. How helpful was the orientation at the training activity location?

Not Helpful		Helpful		Extremely Helpful
1	2	3	4	5

C. Comments on the orientation:

_____

_____

_____

III. Administration and Logistics

A. Indicate your satisfaction with the following arrangements at the location of the training activity.

	Not Satisfied		Satisfied		Extremely Satisfied
Housing Accommodations	1	2	3	4	5
Training Facilities	1	2	3	4	5
Transportation	1	2	3	4	5
Administration and Logistics	1	2	3	4	5
Arranged Social Activities	1	2	3	4	5

B. Comment on the above arrangement:

_____

_____

_____

IV. Content of the Training Activity

A. At the beginning of the training activity or during the training activity, did you discuss with the trainers how the training activity would meet your specific needs? Yes ( ) No ( )

B. Indicate your achievement of each of the training activity objectives listed below. (Objectives inserted by trainers)

	Not Achieved		Partially Achieved		Fully Achieved
Objective 1:	1	2	3	4	5
Objective 2:	1	2	3	4	5
Objective 3:	1	2	3	4	5
Objective 4:	1	2	3	4	5
Objective 5:	1	2	3	4	5

C. The general level of presentation of the topics was too simple_____, too complex_____, or about right_____.

D. Which topics presented in the training activity do you feel you will use the most when returning to your work? (Please explain)

_____

_____

_____

E. For each of the following topics, indicate your recommendations for future training activities. (Topics inserted by trainers)

	Omit	Less Detail	Leave As Is	Greater Detail
Topic 1:				
Topic 2:				
Topic 3:				
Topic 4:				
Topic 5:				

F. What topics would you recommend be added to a similar training activity?

_____

_____

_____

G. Which topics presented in this training activity were most relevant to your work?

_____

_____

_____

V. Design and Delivery of the Training Activity

A. During the training activity, the daily schedule was too short_____, about right_____, or too long_____.

B. The overall length of the training activity was too short_____, about right_____, or too long_____.

C. Indicate how helpful you found the following learning methods used during the training activity.

	Not Useful		Useful		Very Useful	Not Used
Lectures	1	2	3	4	5	____
Lectures-discussions	1	2	3	4	5	____
Panel discussions	1	2	3	4	5	____
Small group discussions	1	2	3	4	5	____
Case studies	1	2	3	4	5	____
Examples	1	2	3	4	5	____
Problem-solving exercises	1	2	3	4	5	____
Structured role playing	1	2	3	4	5	____
Games or simulations	1	2	3	4	5	____
Demonstrations	1	2	3	4	5	____
Field trips	1	2	3	4	5	____

D. Indicate your opinion of the use of the following learning methods.

	Too Little		About Right		Too Much	Not Used
Lectures	1	2	3	4	5	____
Lectures-discussions	1	2	3	4	5	____
Panel Discussions	1	2	3	4	5	____
Small Group discussions	1	2	3	4	5	____

Case studies	1	2	3	4	5	____
Examples	1	2	3	4	5	____
Problem-solving exercises	1	2	3	4	5	____
Structured role playing	1	2	3	4	5	____
Games or simulations	1	2	3	4	5	____
Demonstrations	1	2	3	4	5	____
Field trips	1	2	3	4	5	____

E. How useful were the following types of training materials?

	Not Useful		Useful		Extremely Useful
Training manual	1	2	3	4	5
Handouts	1	2	3	4	5
Reference books	1	2	3	4	5
Audiovisual materials	1	2	3	4	5
Computer Assisted Instruction	1	2	3	4	5

Comments about materials used:

_____

_____

_____

VI. Trainers

A. Name_____

Rate this trainer in the following areas:

	Poor				Excellent
Knowledge of Subject	1	2	3	4	5
Presentation Skills	1	2	3	4	5
Relating Material to Country	1	2	3	4	5
Overall Effectiveness	1	2	3	4	5

What suggestions can you make to improve the effectiveness of this trainer?

VII. Overall Training Activity Satisfaction

A. Would you recommend this training activity to other individuals with a background similar to you?
Yes ( ) No ( ) Explain why or why not:

_____

_____

_____

B. Rate your overall satisfaction with this training activity:

Not Satisfied		Satisfied		Extremely Satisfied
1	2	3	4	5

C. How confident are you that you can apply the knowledge and skills learned during this training activity when you return to your current position?

Not Confident		Confident		Extremely Confident
1	2	3	4	5

9.4 Sample Follow-Up Evaluation Form

I. Training Activity Information

A. Title_____

Location_____

Date_____

II. Trainee Information

A. Name_____

B. Current Address_____

_____

_____

_____

C. Current Title_____

D. Is this still the same position you had prior to completing the training activity? Yes ( ) No ( ) If no, explain the change:

_____

_____

E. Briefly describe your duties in your current position:

_____

_____

_____

_____

III. Relevance of Topics

A. Since returning to your position, how relevant have you found the following topics to your work? (Topics inserted by trainers)

	Not relevant		Relevant		Very Relevant
Topic 1:	1	2	3	4	5
Topic 2:	1	2	3	4	5
Topic 3:	1	2	3	4	5
Topic 4:	1	2	3	4	5
Topic 5:	1	2	3	4	5

B. Which topics covered in the training activity have you used the most since returning to your current position? Please explain:

_____

_____

_____

_____