



PD-AAS-327
ISN 42615

International Science and Technology Institute, Inc.

EVALUATION REPORT
RESOURCE CONSERVATION AND UTILIZATION PROJECT
NEPAL
(PROJECT NO. 367-0132)

Submitted to:
USAID/Kathmandu
(Contract No. PDC-0000-I-03-4105-00)

Prepared by:
International Science and Technology Institute, Inc.

Washington, D.C.

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October 11, 1985

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ACKNOWLEDGEMENTS

The RCUP evaluation team expresses its sincere appreciation to the people of Mustang, Myagdi, and Gorkha Districts, Nepalese government employees at all levels, USAID staff, RCUP staff, and SECID staff for their patience, hospitality, and openness. The team is especially grateful to Tshetan Dolma, Forestry Services, who is responsible for typing the many drafts and the final report.

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GLOSSARY OF TERMS AND ACRONYMS

AA	Agriculture Assistant
ADB	Asian Development Bank
ADB/ATU	Agricultural Development Bank/Appropriate Technology Unit
ADO	Agricultural Development Officer
AID/W	Agency for International Development/Washington
AMC	Agricultural Marketing Corporation
APROSC	Agricultural Projects Services Center
ARPP	Agricultural Research and Production Project
CACC	Catchment Area Conservation Committee
CCC	Catchment Conservation Committee
CCO	Catchment Conservation Officer
CDO	Chief District Officer
CFD	Community Forest Division (Ministry of Forests)
CFDTP	Community Forestry Development and Training Project
CIDA	Canadian International Development Agency
DCO	District Conservation Officer
DFO	District Forest Officer
DIHM	Department of Irrigation, Hydrology and Meteorology
DLDAH	Department of Livestock Development and Animal Health
DOA	Department of Agriculture
DOF	Department of Forest
DSCWM	Department of Soil Conservation & Watershed Management
DWSS	Department of Water Supply and Sewerage
DTO	District Technical Officer
FAM	Field Activities Monitor
FAO	Food and Agriculture Organization
FRIC	Forest Research and Information Center
FSI	Foreign Service Institute
FSR	Farming Systems Research
FSRO	Forest Survey Research Office
GON	Government of Nepal
HMG/N	His Majesty's Government of Nepal
IAAS	Institute of Agriculture and Animal Science
ICP	Integrated Cereals Project
IDA	World Bank/International Development Association
IRDP	Integrated Rural Development Program
IRNR	Institute of Renewable Natural Resources
JT	Junior Technician
JTA	Junior Technical Assistant
MFSC	Ministry of Forest and Soil Conservation
MFSCTW	Ministry of Forest and Soil Conservation Training Wing
MPLD	Ministry of Panchayat and Local Development
MPLD/WDS	Ministry of Panchayat and Local Development/Women Development Services
NCCR	National Council for the Conservation of Natural Resources
NDS	National Development Service
NRSC	National Remote Sensing Centre
ODA	Overseas Development Agency (British)
ODM	Overseas Development Ministry (British)
PCC	Panchayat Conservation Committee

(Glossary Contd.....)

PCV	Peace Corps Volunteer
PF	Panchayat Forest
PPF	Panchayat Protected Forest
PIAP	Project Impact Assessment Plan
PID	Project Identification Document
PP	Project Paper
RCUP	Resource Conservation & Utilization Project
RD	Rural Development
SADP	Small Area Development Program
SECID	South-East Consortium for International Development
SFCA	Special Foreign Currency Account
SLC	School Leaving Certificate
ST/FNR	Bureau of Science and Technology, Office of Forestry and Natural Resources
TOEFL	Test of English as a Foreign Language
UNDP/FAO	United Nations Development Program/Food and Agriculture Organization
U.S.	United States
USAID	United States Agency for International Development
USAID/N	United States Agency for International Development/Nepal
WDO	Women Development Officer
WDU	Watershed Development Unit.



EXECUTIVE SUMMARY

A. Problem and Overview

The Resource Conservation and Utilization Project (RCUP) is a multifaceted and integrated watershed project that attempts to halt the rapid degradation of Nepal's environment. There are currently three other active watershed projects in Nepal: 1) Tinau (SATA/GTZ), 2) Phewa tal (UNDP/FAO), and 3) Bagmati (GON). Related USAID activities include the Rapti Integrated Rural Development Project, the Institute of Agriculture and Animal Science Project, and the recently completed Integrated Cereals Project.

B. U.S. Assistance

RCUP involves three major efforts: 1) Assisting in the development of the Institute of Natural Resources and related manpower training, 2) Construction of buildings to serve as field centers and 3) Implementation of a field program of integrated resource management. The project purpose is to assist HMG/N in the protection and restoration of the soil, water and plant resource base upon which the rural population is totally dependent.

The project is administered through the Department of Soil Conservation and Watershed Management (DSCWM) of HMG and involves seven line agencies under 4 ministries plus Tribhuvan University. The project was funded at \$ 27.5 million for the period 1980/81 thru 1984/85 and has been extended without additional funds until 7/15/86. The contractor is the Southeast Consortium for International Development (SECID). The basic field strategy involves supporting line agencies in working with local people on 17 project components. The project was conceived as the first phase of a long term commitment by USAID to help halt the rapid deterioration of Nepal's environment.

C. The Evaluation

During the 1985 Nepal program review by USAID the Asia Bureau recommended that the project be extended for one year with an evaluation in the fall of 1985 to assess the progress and impact of the project. A special evaluation was conducted in 1983. The present evaluation was conducted in Kathmandu and at selected field sites. The evaluation team split in two groups which spent 10 and 18 days respectively in the field. The primary documents used were the Project Paper, Project Implementation Plan, 1983 Special Evaluation Report, 1985 Project Extension Paper, and a evaluation briefing book prepared by SECID staff. Interviews were conducted with project staff, HMG officials, and representatives of related donor projects. The major obstacles in evaluation were the normal time involved in visiting the widely dispersed field sites in the difficult terrain of Nepal and the limited amount of primary field data.

D. Findings

Following is a summary of the findings of the evaluation team:

1. RCUP assistance in forming the Institute of Renewable Natural Resources, participant training and, and on-the-job training will have a very significant impact on natural resource management in all of Nepal for decades to come.
2. The project resulted in the construction of 174 buildings including 12 DSCWM field centers in three districts. These centers can serve as the foci for future integrated resource management.
3. The construction program carried out under very difficult conditions, mostly without road access, resulted in the development of a private sector construction capability for such conditions.
4. Although the project has made significant contributions in many of the components, no model for integrated watershed management has been developed.
5. A plan for integration was not included in the project design. The concept of a watershed as an integrating unit has not been used, rather line agency programs are being implemented within the designated watershed with only minimal integration. A plan for integration was not included in the project design.
6. Another reason why this integration was not achieved is that too many components were tried over too large an area too quickly.
7. A good start has been made in developing a structure for peoples participation, but it has not always been used effectively. There is no synthesis of this experience.
8. Although a good system of fiscal monitoring has been established, physical accomplishments are reported only as achievement against work plan targets. The monitoring system, repeatedly insisted on by USAID, has not yet been implemented in the field.
9. Considering the components most relevant to the project purpose of soil, water, and plant conservation, the activities in these components are rated high in technical soundness, moderate in institution building and potential impact, moderate to low in peoples' participation, and low in integration with each other and with other project activities.
10. RCUP made a significant contribution in increasing the awareness and concern of people for natural resource conservation and management in the three districts of the project area.
11. A good start has been made in developing the organizational structure in HMG and at the local levels as well as the facilities on which a major follow-on project can be built.

E. Project Design and Policy Implication

The evaluation team believes the project design was too complex and diffuse to effectively accomplish the project purpose with the resources available. Although the watershed was to be the integrating unit and peoples participation thru village dialogue the integrating mechanism, there was no evidence of a plan to bring these elements together to produce integration. Integration was in part inhibited by the number and diversity of components in the project and further complicated by a major construction effort plus an effort to assist in developing a new

Institute. The implication would be to carefully consider both at the design and during implementation the precise purpose and the core elements necessary to achieve that purpose.

F. Recommendations

Considering the limited amount of funds remaining in the project, after termination of the SECID contract in July 1986 it is recommended that these funds be managed directly by USAID with the following priority: 1. Continue support to all persons overseas so that they can complete their training programs. 2. Complete turn-key construction. 3. Continue support to the Institute of Renewable Natural Resources. 4. Continue support to HMG Ministry of Forestry and Soil conservation to begin an integrated field watershed program in very small watersheds in close proximity to the DSCWM field centers in the project area.

Furthermore it is recommended that work begin immediately on designing two new follow on projects: 1. A major support project for the Institute of Renewable Natural Resources. 2. A project to directly support HMG effort to develop an internal capability to implement a tightly focused watershed program.

CHAPTER I

RECOMMENDATIONS

Considering the limited amount of funds available in the project after termination of the SECID contract in July 1986, it is recommended that the remaining funds be managed directly by USAID with the following priority: 1. Continue participant support to all persons overseas so that they can complete their programs. 2. Complete turn-key construction. 3. Continue support to the Institute of Renewable Natural Resources. 4. Continue support to HMG Ministry of Forestry and Soil Conservation to begin an integrated field watershed program.

Furthermore it is recommended that work begin immediately on designing two new follow-on projects: 1. A major support project for the Institute of Renewable Natural Resources. 2. A project to provide direct support to HMG to develop an internal capability to implement a tightly focused watershed program.

During Current SECID Contract Period

RECOMMENDATION 1 - Continue SECID and HMG program support as planned for remaining implementation period (until July 15, 1986).

The commitments have already been made for the current fiscal year. Any continuing obligations beyond that time should be handled by USAID directly.

Nepali SECID/RCUP staff should concentrate their attention on improving the qualitative data collected from programs and synthesizing the results obtained.

Immediate Follow-on Activities After July 15, 1986.

RECOMMENDATION 2 - USAID should place first priority on use of the remaining balance (after July 15, 1986) to cover carryover costs, as follows:

First priority should go to completion of participant training in progress.

We recommend USAID take direct responsibility for any turnkey construction completion or maintenance required. We recommend USAID use other training funds for those persons scheduled for training but not yet started.

RECOMMENDATION 3 - USAID should place next priority of the remaining funds (after covering carryover costs as indicated in Recommendation # 2) to provide continued support to IRNR.

A. Continue Basic Support of IRNR

IRNR is a "fragile flower" that needs considerable attention and support if it is to grow to realize its full potential. The evaluation team recognized all areas need attention but two deserve special attention : (1) teaching and (2) applied research and extension.

As part of this continuing basic operating support it is recommended that an advisor to the Dean be included. This person should be experienced in academic administration, and should teach some courses and assist in applied research programs. An alternative to hiring one long term technical adviser may be to bring in a visiting scholar with the appropriate background and international experience to fill this role for at least one year (See Section B).

Pursuant to this support the following issues should be addressed by IRNR/HMG and a formal response prepared for USAID:

(1) The identity of IRNR as an institute with a change in emphasis from traditional forestry to integrated natural resources should be reflected by officially naming the new Institute as IRNR (or other appropriate name).

(2) Faculty should meet classes regularly. The exact cause of this problem identified by students, and later confirmed is not known but the cause should be found and the problem addressed.

(3) IRNR is a new rapidly developing institution , it should have the flexibility to change curriculum more frequently than the 5 year interval prescribed by Tribhuvan University and flexibility to try the Semester system if it wishes.

(4) The current system of insuring women's participation is a 10% quota for women and is interpreted as a limit rather than a minimum. This interpretation should be changed or a higher percentage set.

(5) Attention has been focused on the BSc program. What will be done to strengthen the Certificate level? Could not BSc faculty help teach at Certificate level? The effectiveness of field programs like RCUP is heavily dependent on Certificate level personnel.

B. Establish a Visiting Scholar Fund

IRNR could attract well-qualified visiting scholars from all over the world. A fund could be established to support their basic needs and a small stipend when appropriate. Emphasis should be placed on bringing people who would contribute to teaching, development of field practicals, and applied research.

Among the selection criteria used, consideration should be given to the following:

- (1) Well-qualified in their discipline.
- (2) Field or practical experience.
- (3) Bring part of their own support from sabbatical or research project.
- (4) Could link with an IRNR faculty member to develop additional applied research.
- (5) Would be interested in a continuing long term relationship with IRNR both as an individual and through home institution.

If \$ 100,000 would be used for this program then 3 to 5 persons could be brought in each year. These faculty would relieve the load on IRNR faculty so they could become more involved in applied research along with their teaching. Furthermore, if people were selected from institutions who had a continuing interest in IRNR, benefits to IRNR would continue far into the future.

C. Establish an Applied Research Fund for IRNR

This fund would support applied research. One-half of these funds would be earmarked for integrated studies relating to small watershed projects. An advisory committee for allocation of these funds would include faculty representation as well as representatives from appropriate government agencies, especially from Soil Conservation and Watershed Management, Forestry, Livestock, and Agriculture. The integrated studies research should be coordinated closely with DSCWM.

A minimum of approximately \$ 50,000 should be designated for this fund.

D. Estimated Cost for IRNR = \$800,000

RECOMMENDATION 4 - Strengthen MFSC capacity to implement small watershed programs by supporting the formation of a Watershed Development Unit at the appropriate level in HMG.

This Central unit would have the overall responsibility to work with District Officers and local people in Districts to initiate small (approximately 5-10 sq.km.) watershed demonstration areas at the Panchayat or Ward level. Among the responsibilities of this unit would be the following: (1) setting the biophysical, economic and social criteria for such programs; (2) assisting in implementation; (3) conducting applied field research including evaluation for biophysical, economic, and social effectiveness; (4) developing and testing new conservation techniques and procedures; (5) assisting districts in disseminating results from these studies; (6) continually monitoring the progress of all watershed projects and based on synthesis of this information, provide helpful feedback to project managers and to appropriate HMG agencies.

In developing this small watershed approach the following components are essential: (1) Soil Conservation, (2) Range/Pasture Management (3) Forestry, (4) Forage Production, (5) Sociology/Extension and (6) Economics. An interdisciplinary team capable of covering these topics would constitute the Central Watershed Development Unit. It is possible that one team member could cover two of the above components. The Watershed Development Unit members should be permanent employees of HMG.

An early task of the WDU would be to establish a specific set of tasks and identify policy needs to implement a small watershed program. To assist in this effort it may be desirable to visit small watershed projects (e.g. Sukamaji in India) that have been successful.

During the next two years the Watershed Development Unit should concentrate on the three districts involved in RCUP, established a demonstration watershed near as many of the 12 DSCWM sub-centres as possible with the funding available, but to include at least one unit in each district. Criteria for selection should include in order of priority:

- 1) Watershed has serious soil and water conservation problems
- 2) High interest by local people
- 3) Utilization of RCUP-built facilities

In accordance with agreements already made, the CCO could be changed to a DCO and the CCC to a DCC. The District Conservation Officer would work with any farmer or group of farmers in the District on soil conservation activities in addition to coordinating activities in the small watershed demonstration projects.

Implementation of the small watershed program would be the responsibility of the District Conservation Officer working with the field staff at each field center. The DCO would have the responsibility to coordinate with other line agencies where required.

In the case of Upper Mustang, a watershed may not be the most logical unit - a range unit may be more appropriate - but the basic principles of an integrated approach can still be used. Throughout the evaluation, the team was told by people at all levels from Panchayat to Ministry that Nepal does not need expensive long-term technical assistance for soil and water conservation. This recommendation would test that assertion. If sufficient progress is shown at the end of two years then USAID and HMG should consider a country-wide adoption of the approach including its continued refinement.

In addition to the demonstration watershed efforts, HMG may also wish to use some of these funds to support soil conservation technicians at the field centers established by RCUP. Job descriptions for these technicians should include assisting farmers with conservation practices, explaining the concepts of watershed management, attending Panchayat meetings, and working with MPLD to get watershed protection on drinking water source areas and on areas above small irrigation projects.

This project calls for a "process" view of development as contrasted to a "blueprint" view and would place emphasis on progress toward a goal rather than goal achievement. The goal is to develop and apply an economically efficient and environmentally sound approach to land management in the hills of Nepal. The approach should be a learning one and adaptations made based on that learning. Thus "monitoring" indicators become the critical ones. The logical framework does not readily fit this type of project unless it is modified to fit the concept of progress (including adaptation based on experience) toward a goal.

Estimated Cost for F.Y. 86/87 and 87/88 = \$ 600,000

RECOMMENDATION 5 - To insure continuation of resource conservation activities in the RCUP area during the two year interim. HMG/USAID should explore linkages with other existing project.

Among the possibilities that would both synthesize information and support continued field activity are the following:

1. Community Forestry Program to continue forestry programs
2. ODA Forest Research Project to support continuation of species trials
3. Agricultural Research Project to link farming systems with watershed concept
4. ICIMOD to analyze policy constraints involved in implementing RCUP and to synthesize the experience from the RCUP work with Gaun Sallah.
5. UNICEF and MPLD to support drinking water and small irrigation projects
6. PVO's - Both Save the Children and CARE are working in the project area.

New Project Activities

RECOMMENDATION 6 -USAID/HMG should begin developing a major project for the next phase of IRNR.

Recommendation # 1 is aimed at continuing support of IRNR for the next two years. Beyond that a major continuing support project should be developed to cover a program of visiting scholars, equipment, scholarships, faculty development, and research.

Estimated Cost = approximately \$ 1.25 million per year beginning in 1988/89 F.Y. and extending 8 years to cover the period of HMG's eighth 5 - year plan.

RECOMMENDATION - 7 USAID/HMG should begin developing a major project for strengthening HMG capacity to implement soil conservation and watershed management programs beyond the 87/88 F.Y.

The evaluation team strongly believes that USAID should shift its strategy from a technical assistance project orientation to supporting the development of HMG capacity to solve its own problems. HMG currently is going through a period of major emphasis on decentralization. During the next two years many of the currently unresolved issues concerning the relative roles of central, regional and local government will be settled and it will be an appropriate time to make a major investment to assist the HMG conservation effort. Furthermore, if Recommendation # 4 is followed there will be a good opportunity to assess HMG progress in managing this type of institution-building assistance. Based on these factors the final decision can be made on project specifics and funding level.

Again this would be a "process" project rather than a "blueprint" one where specific outputs can not be specified. However, a set of reasonable monitoring indicator could be developed including the following:

Number of Ha. under watershed conservation plan

Number of Ha. under watershed conservation treatment

Number of districts involved

Number of Panchayats involved in districts.

Quality of watershed programs in terms of such indicators as qualitative changes in vegetative cover, estimated changes in soil loss, observable changes in stream flow and stream quality.

Suggested funding level: 1 million dollars per year over the 8 year period to include HMG 8th five year plan.

RECOMMENDATION 8 - Fund a study of private enterprise possibilities in natural resource conservation and utilization for the hill regions of Nepal.

The objective of this study would be to determine the possibilities for fostering the development of private enterprise activities in natural resource conservation and utilization with emphasis on private alternatives which would be cost effective and self-sustaining complements to HMG/N programs.

Among the possibilities to examine are the following: 1. Private nurseries 2. Panchayat forest management 3. Small watershed planning and management 4. Leased land, and 5. Small scale forest industry. The study procedure would involve world literature review, interviews with appropriate Nepali support agencies, and interviews with private entrepreneurs in Nepal. The estimated length of the study would be 1 year and the cost \$ 50,000.

A synthesis would be made of the information gathered and a set of recommendations based on this synthesis that could be considered by HMG/Donors for implementation. Recommendations would include target areas, incentives needed, and technical assistance required.

RECOMMENDATION 9 - Provide additional funding for Women's Development activities with special emphasis on resource conservation and utilization.

Based on the evaluation team's observations, there is an excellent potential in this area for education and extension.

Support should concentrate on :

1. Assisting in the recruitment of women for the Institute of Renewable Natural Resources including activities that would identify potential students, assist students in the application procedure, provide preparatory briefing for students accepted utilizing the experiences of farmer women, and assisting students enrolled in the program by providing counseling support.

2. Assisting in the implementation of watershed management activities by involving women's groups at the village level in planning, implementing, and maintaining soil conservation techniques, and by helping develop a conservation ethic by local people and in the schools.

CHAPTER - II

INTRODUCTION

A. The Project

The Resource Conservation and Utilization Project (RCUP) is a multifaceted and integrated project that will attempt to halt the rapid degradation of Nepal's environment (Project Paper). The stated purpose from the project logical framework is;

To assist HMG/Nepal in the soil protection and restoration of the soil, water and plant resource base upon which the rural population is totally dependent.

In addition to a field program the project required major efforts in constructing field centers eventually involving 174 buildings. Also included in the project design was a manpower development program involving assistance in developing a B.Sc. curriculum for the new Institute of Renewable Natural Resources (IRNR), participant training, and in-service training. The in-service training involved cooperative efforts with the Ministry of Forestry Training Wing.

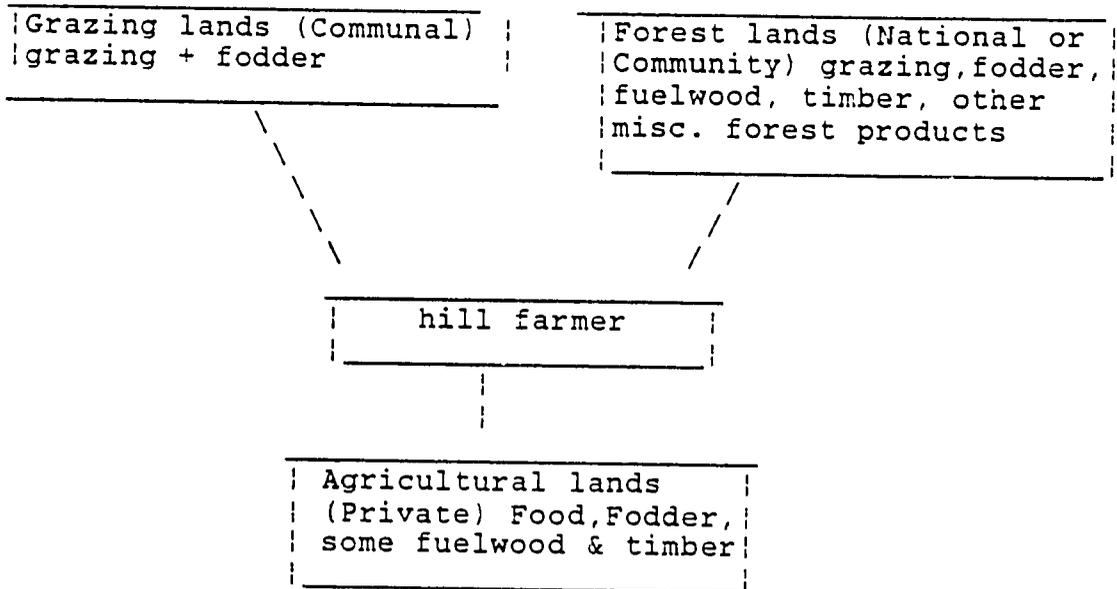
The project includes 17 components, seven line agencies and several independent units, involving 4 ministries plus Tribhuvan University. USAID project expenditures for 1980/81 thru 1984/85 were \$ 21,852,595. The total expenditure thru the prime contractor, SECID, was \$ 14,161,63 (from U.S.AID Program Specialist, 9/85). The Project Extension Paper presents an estimated total expenditure thru F.Y.'85 by SECID of \$ 15,200,000 broken down as follows:

Technical assistance	\$ 7,680,000
Training	\$ 1,834,000
Commodities	\$ 2,169,000
Construction	\$ 3,517,000

The project focused on two watersheds the Kali Gandaki Catchment (4,120 sq.km) and the Daroundi (795 sq.km) in three districts Gorkha, Mustang, and Myagdi. The major part of these watersheds is located in the Middle Hills of Nepal but small portions of each extend into the Alpine. In the case of the Upper Kali Gandaki, the headwater is located in the high elevation, rain-shadow Tibetan Plateau.

B. The Project Setting

The hill farmer in Nepal is a subsistence farmer with an average family size of 5 to 6 people and an average farm size of approximately 1 ha. There are an estimated 10 million people living in the hill country. The resource utilization system in its simplest form is an integrated system of agriculture, agro-forestry, grazing, and forest utilization for grazing, fuelwood, fodder, timber, and other products. This system is presented in the following oversimplified diagram.

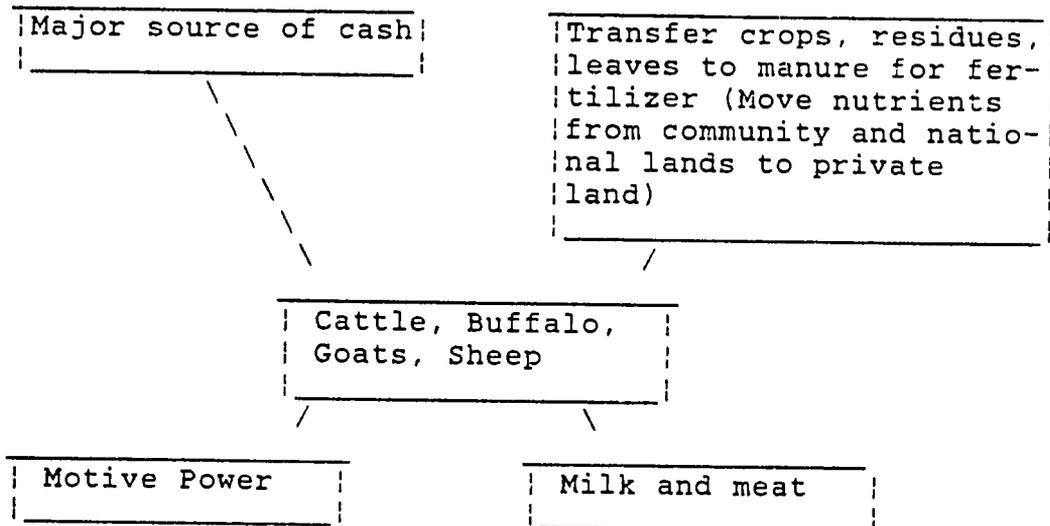


One estimated use of forest lands for the average family in an area of west central Nepal with present level of management is as follows:

- 3.5 Ha. for fodder
- 0.3 to 0.6 Ha. for fuel
- 0.4 Ha. for timber

(These figures are from John Wyatt Smith, 1982, APROSC occasional Paper # 1).

The importance of livestock in the Hills of Nepal is illustrated by the the following diagram adapted from (ref.):



Livestock take on special significance in relation to watershed management because often the most severely eroded lands are the communal grazing lands and the marginal cultivated lands on steep slopes.

RCUP is one of several watershed management projects currently underway in Nepal. The Tinau Project is a cooperative effort of HMG with SATA and GTZ involving 5 line agencies of HMG. The Phewa Tal project has been underway for eight years, involves 3 departments and is sponsored by UNDP/FAO. The Bagmati Watershed is an HMG project. All of the above are administered by the Department of Soil Conservation and Watershed Management (DSCWM) in the Ministry of Forestry and Soil Conservation of HMG. This department was established in 1974 and its basic mandate is to promote integrated watershed management in the hills and mountain regions of Nepal.

In addition to the above there are at least 7 integrated rural development projects that include various conservation components such as forestry, agriculture, and livestock management. Similarly there are sectoral projects such as the Community Forestry Project that are directly related to good watershed management but are not managed by DSCWM.

The Institute of Renewable Natural Resources (IRNR) is part of Tribhuvan University and was an extension of the Institute of Forestry (IOF) located at Hetauda. IOF has traditionally trained foresters at the certificate level. Prior to the development of the IRNR B.SC. program 3 years

ago, diploma candidates were sent out of the country, primarily to India. The B.Sc. program currently housed at Hetauda will be moved to Pokhara in 1986 when the new campus facilities are completed. The plan is that certificate level programs will be offered at both the Hetauda and Pokhara campuses.

C. Underlying Assumptions

As evaluation effort by outsiders necessarily involves a set of often unstated assumptions that condition the evaluation and subsequent recommendations. Realizing the dangers and limitations involved in a 6 - week evaluation of a complex project set in a rapidly changing social environment and under the difficult physical conditions of Nepal, the evaluation team attempted to identify what it considers some of its key assumptions underlying this evaluation exercise. Users of this evaluation report should examine these assumptions carefully in interpreting this report.

- 1). Protection and restoration of the soil, water, and plant in the three RCUP Districts was the original underlying Project Purpose. Although many elements (components) may influence achievement of this purpose, some elements are more critical than others and work on these critical elements is worth pursuing even if other elements are not involved.
- 2). Because grazing and forestry usually involved community or national lands, focusing only on the individual farmer and his land is not sufficient to resolve conservation problems.
- 3). What was sought was the testing and implementation of a development model which might be replicated in other areas in Nepal. Thus total land/population area covered in RCUP was less important than perfecting the approach.
- 4). A small watershed (catchment) area is an appropriate land unit on which to focus resource conservation efforts in the hill region of Nepal.
- 5). General experience from watershed management projects suggests that, for Nepal, vegetation measures are more appropriate than structural measures.
- 6). An effective conservation program must have the support of the local people. This requires the involvement of those persons at all stages.

D. Evaluation Tasks

The statement of work for the evaluation team lists the following principle tasks:

- 1). To evaluate the progress and impact of RCUP in meeting project objectives on both a component by component basis and with regard to the overall goal and purpose of the project.
- 2). To assess progress made in addressing the issues raised by the RCUP special evaluation.
- 3). Based on (1) & (2) above, to assess the validity and analyze the soundness of the extension paper on a component by component basis.
- 4). To determine the extent of visible and measurable project impact to date with principal examples, and assess prospects for additional impact on natural resource management and conservation. Relate potential impact to funding and personnel requirements. Impact analysis should include specific areas of:
 - Institution Building. Establishment of institutional framework including professional and technical staff to plan, implement and evaluate the RCUP program.
 - Participation. Changes in local participation. Impact of local participation on development planning and objectives.
 - Training. To include numbers trained (male/female), relevance of training, present and possible future impact of training to realization of project objectives.
 - Forest and Pasture Management/Soil Conservation.
 - Agricultural Production. Impact of programs on increasing farmer output, possible income gains, use of improved practices and technology.
 - Village Water Supply and other Small Rural Works. Impact on local participation/mobilization and, to extent readily apparent, improved living conditions in project area.

5. To provide USAID and the GON with concrete recommendations on a) the remaining implementation period of RCUP, and b) the nature and scope of future USAID assistance to Nepal in the areas of natural resource management and conservation.
6. To provide guidance to A.I.D. and the GON on the following issues:
 - Assessment of effectiveness of the various approaches to natural resource management (including forest and pasture management, soil conservation, etc.) which have been used during different phases of the project. Including analysis of long range policy and institutional implications.
 - Assessment of effectiveness of the project in mobilizing local participation (including women) and local resources.
 - Document lessons learned and identify constraints and possible remedial measures the project can take for more effective implementation.
 - Assessment of long-term feasibility of continuing project activities (a) without foreign assistance; (b) within the GON administrative framework; and (c) by local Panchayats in the context of Nepal's move towards political decentralization.
7. Review the recent Smith/Korns study and recommendations (to be provided to team) concerning quality of data and data collection system in RCUP. Evaluation should comment on study and based on their evaluation finding, add their recommendations, if necessary.

Upon consultation with USAID/Nepal and after review of the evaluative materials was furnished the team organized the report around these tasks as follows:

- 1) Tasks # 1 and # 4 were combined and are covered in Chapter IV- Overall Evaluation and in appendix A - Component Evaluation. The components are those listed in the Project Extension Paper.
- 2) Tasks # 2,3 and 7 are covered in separate sections of the appendix.
- 3) Tasks # 5 and # 6 are covered in Chapter I - Recommendations except that "lessons learned" are presented in a separate section of the appendix.

CHAPTER III

EVALUATION PROCEDURE

The evaluation procedure followed was to meet with key officials of both HMG and USAID in Kathmandu and obtain an initial briefing. This was followed by a briefing from RCUP core staff concurrently some visits were made with other donor watershed project personnel. A complete listing of these visits is found in the Appendix. Also during this period, the team began reviewing key documents.

The team then split into two groups and along with several of the staff from USAID and RCUP toured field sites. One group went to the Daraundi Watershed, the other to Kali Gandaki. These itineraries are presented in the appendix.

The team encountered great difficulty in obtaining data on individual components related to costs, benefits, quality of work or, in some cases, actual work performed. Given this situation, the evaluation team relied heavily on the only set of data generally available - the target achievements by line agencies. This data is seldom checked and evaluation team, from its limited field observations, has reason to question its validity in some instances due to the poor measurement and reporting methods used.

SECID put much effort into a cost/benefit analysis of selected project activities. However the evaluation team made only limited use of this document because very little primary field data was available from the project area.

Although many different documents were used, several key documents are referred to many times throughout this report. These key documents are:

USAID/Nepal - February 1980
PROJECT PAPER - Resource Conservation and Utilization
Project - Project Number 367-0132

SECID/Chapel Hill - January 1981
OVERALL MANAGEMENT IMPLEMENTATION PLAN

Development Association, Inc. - April 1983
SPECIAL EVALUATION of the Resources Conservation and
Utilization Project

USAID/Nepal - January 1985
Resource Conservation and Utilization Project Project No.
367-0132 PROJECT EXTENSION PAPER 1985 - 1988

Smith & Korns - June 1985
MONITORING AND IMPACT ASSESSMENT SYSTEM

SECID/RCUP staff - August 1985
RCUP EVALUATION BRIEFING BOOK

SECID - September 1985
BENEFIT/COST STUDIES

After the field trips, the team went thru a debriefing process together, then began work on the individual component evaluations. These components were reviewed individually and as a team, then based on the review and revisions of the individual components, the team developed the overall evaluation section. Upon completion of these drafts, they were forwarded to USAID and HMG for review and feedback.

CHAPTER IV

OVERALL EVALUATION

A. Evaluation Findings Summary

1. RCUP assistance in forming the Institute of Renewable Natural Resources, participant training and, and on-the-job training will have a very significant impact on natural resource management in all of Nepal for decades to come.
2. The project resulted in the construction of 174 building including 12 Department of Soil Conservation and Watershed Management field centers in the three districts. These centers can serve as the foci for future integrated resource management.
3. The construction program carried out under very difficult conditions, mostly without road access, resulted in the development of a private sector construction capability for such conditions.
4. Although the project has made significant contributions in many of the components, no model for integrated watershed management has been developed.
5. Beginning with design and continuing to present, the concept of a watershed as an integrating unit has not been used, rather line agency programs are being implemented within designated basins with only minimal integration. A plan for integration was not included in the project design.
6. Another reason why this integration was not achieved is that too many components were tried over too large an area too quickly.
7. A good start has been made in developing a structure for peoples participation, but it has not always been used effectively. There is no synthesis of this experience.
8. Although a good system of fiscal monitoring has been established, physical accomplishments are reported only as achievement against work plan targets. The monitoring system, repeatedly insisted on by USAID, has not yet been implemented in the field.
9. Considering the components most relevant to the project purpose of soil, water, and plant conservation, the activities in these components are rated high in technical soundness, moderate in institution building and potential impact, moderate to low in peoples' participation, and low in integration with each other and with other project activities.

10. RCUP made a significant contribution in increasing the awareness and concern of people for natural resource conservation and management in the three Districts of the project area.
11. A good start has been made in developing the organizational structure in HMG and at the local levels as well as the facilities on which a major follow-on project can be built.

B. Evaluation Framework

The Resource Conservation and Utilization Project is a complex endeavor involving 17 components and numerous sub-components. The project purpose as stated in the project design summary logical framework reads:

To assist HMG/N in the protection and restoration of the soil, water, and plant resource base upon which the rural population is totally dependent.

Outputs identified to achieve the project purpose are trained persons, watershed and forest management programs, fodder and fuelwood tree plantations, increased crop yields, and increased livestock productivity. Building construction, which turned out to be a major component of the project involving approximately \$4 million expenditures, is listed as a project input under forest management in the project paper.

Complicating the interpretation of the logical framework is identification in the project paper of a number of integrated approaches leading to an overall strategy involving:

- a. Institutional Development
- b. Energy Alternatives
- c. Forest Management
- d. Range Management
- e. Agricultural Improvements
- f. Watershed Management
- g. Inventory and Monitoring System
- h. Social Support System.

Further breakdown of these approaches led to identification of the 17 components involved in this evaluation.

Initially four watersheds were targeted. This was later reduced to two watersheds encompassing three districts. The Kali Gandaki Catchment involves 4,120 sq. km. (1,609 sq. mi) and the Daroundi catchment area is 795 sq. km. (310 sq. mi).

Throughout the various documents related to the planning and implementation of RCUP there is frequent mention of

integration. The project paper speaks of an "integrative and multi-objective" overall strategy. This integration is planned at three levels - national, catchment, and field center. Although it is never clearly articulated, the underlying assumption appears to be that the watershed (Catchment) is the primary unit for integration. The organizational unit and the method of integration are key issues in overall evaluation.

There is an important adaptation of the project paper goal and purpose that appears in the Implementation Plan of January 1981:

" The RCUP implementation plan proceeds from a clear understanding of the goals and supporting objectives so that desirable and predictable results will be achieved. We assess these goals to be :

- To assist HMG in the protection, restoration and development of a soil, water and plant resource base upon which the rural hill population is totally dependent.
- To assist HMG in building an infrastructure at the national, district, and community level capable of designing, implementing and evaluating conservation techniques and activities".

The significant adaptation is that infrastructure building is raised to the level of a project goal or in USAID terminology a second project purpose.

A set of 9 primary objectives were identified in the implementation plan to address these goals. Most significant to the overall evaluation is that one stated primary objective is, "Promote interagency coordination and cooperation to solve and carry out the critical and complex programs of resource conservation and utilization in Nepal".

A very important consideration is that, at the time of this evaluation, Nepal is going thru a major transition in shifting from a central level to a district level focus for all HMG activities. This shift has important consequences especially for the institution building aspects of RCUP.

The evaluation team attempted to use several different frameworks for the overall evaluation section: (1) the logical framework (2) the evaluation team task assignments and (3) the nine primary objectives in the project

implementation plan. In the team's opinion the logical framework provided a very poor synopsis of the Project Paper. The evaluation task assignments were too overlapping and categorically different from project operations to be useful as the primary organizational framework for evaluation although all items are covered in the evaluation. The method of reporting in all project documents including the SECID briefing document does not track progress on the 9 primary objectives. Consequently the evaluation team tried to synthesize each of the above together with the 17 component reports into three major categories: (1) Manpower Development (2) Facilities Development and, (3) Development of a workable integrated field approach to resource conservation.

C. Evaluation Assessment

In the judgement of the evaluation team the RCUP clearly sought to accomplish more than could be reasonably expected under the circumstances that exist in Nepal, and with the resources available. The integration of 17 project components spread over nearly 5,000 sq. km. of the rugged hill terrain of Nepal and involving 7 line agencies and 2 independent units in at least 4 ministries is a bold endeavor for a single donor-sponsored project even over a 15 year period. The team does believe that the integration of the primary components of the soil, plant, water system that the hill farmer must manage/use - agriculture including livestock, forestry and soil conservation can and must be integrated on a small watershed basis if successful resource management is to occur.

It is the opinion of the team that the integration of these key elements was lost amidst the complexity described above and, not surprisingly, the project resorted to component management driven largely by line agency targets. The most succinct evidence of this fact can be found in the SECID briefing book by the absence of any reference to accomplishment of overall project objectives and the inclusion in almost every component report of the problem of lack of coordination. Field observations, discussions with persons at all levels of involvement with RCUP, and review of the documents provided the evaluation team reinforce this conclusion.

This lack of integration should not obscure the significant progress made on many of the individual components, and occasionally on the integration of several components. One of the best examples is at Marpha at the Tibetan Refugee Camp where at least 4 departments are working together at the same site.

As the project evolved two major thrusts became increasingly important - manpower development and facilities construction. These two activities have consumed approximately 1/2 of the USAID expenditure thru SECID in the project through HMG FY 1985.

1). Manpower Development

The evaluation team believes the accomplishments to date in helping the development of the Institute of Renewable Natural Resources, assistance to the training wing of the MFSC participant training, and on-the-job training as part of the RCUP field activities are the greatest contribution the project has made to date. These activities are aimed at helping Nepal help itself and will have a very significant impact on natural resource management in all of Nepal for decades to come if the proper environment for their effective action is created by HMG organization, policy, and financial resources.

The participant training program has resulted in the training of 60 long term and 65 short term trainees sent overseas. According to the SECID briefing documents 10 of the long term participants who have returned to Nepal to date are now at the IOF/IRNR, 5 are at DSCWM, and 4 are in other HMG departments. These returnees include the campus chief for the new IRNR campus at Pokhara and the Deputy Coordinator of RCUP and Planning Officer of DSCWM. Thus the impact of these persons on resource conservation and utilization in Nepal is already underway.

Ten scholarships remain unused because USAID and HMG could not agree on course content.

The field team encountered enthusiastic and dedicated field personnel, but because many of the junior officers have little or no field experience they require more technical assistance and reinforcement on a frequent basis. Several technicians felt that there was little interest in their work and wished more line agency and SECID officials would visit critiquing and giving technical support.

2). Facilities Construction

These activities were discussed in detail under the individual component evaluation. In the context of the overall project the evaluation team must assess their potential impact on the environmental problems of Nepal. There is a close relationship between manpower development and facilities construction in that the amount of impact will depend on how quickly the facilities are utilized, the

quality of staff assigned and the presence of a workable field approach to integrated resource management. The impact of the facilities construction is limited primarily to the 3 districts involved in the project. One can argue that, if the hypothesis is that these facilities are a significant factor in attracting high quality personnel to work in remote areas, the approach can have an impact on resource management in all of Nepal. The evaluation seriously questions this proposition, since factors like health services and quality of education are also major considerations for staff in remote locations.

The team believes a very key role of the facilities construction will be to serve as a point of integration of agencies with each other and with the farmer clients. If this does happen, and there is reasonable basis to believe that it will, then the facilities construction activity can make a very substantial impact on the target area and serve as a model for all of Nepal.

There have been some allegations that the facilities because of their high standard may actually hinder project goals because they will result in alienation of the people they are meant to serve - the small poor rural subsistence farmer. The evaluation team did not have any sound basis to judge this issue, and it cannot be judged until such time as the facilities are put to use.

3). Development of an Integrated Field Approach

According to project documents these activities constitute the core of the RCUP. The evaluation team's understanding of the project objective in this regard is that RCUP is to develop an integrated approach involving the key natural resources, involving local people, and using the catchment (Daroundi or Upper Kali Gandaki) as the management units. The approach(es) are to be developed and refined so that they can have an impact beyond the target watershed.

The project devoted much effort to using the "Gaun Sallah" or "Village Dialogue" method to involve people in planning at the local level. The result was that local people did have a voice in adjusting line agency targets. Furthermore a series of Panchayat Resource Plans were developed. However these plans appear to be built around line agency targets without integration. The discussions within the Catchment Conservation Committees are a start toward integration. At least one effort was made by the CCO at Gorkha to develop an integrated approach but it was not successful. The experience with "Gaun sallah" and Catchment Committees should be synthesized so these experience can be used in future project design.

The team found significant progress on some individual components as documented in the component evaluation section of this chapter. However, the team found very little evidence of development of an integrated approach. Each participating agency was working on its own and only rarely did two agencies work together at the same site. No case was found where the primary essential components - livestock, forestry, agriculture, and soil conservation were working together at the same site. Thus the team's conclusion is that very little progress has been made on developing a workable integrated watershed approach.

Another core ingredient in the RCUP was to be the involvement of local people in all stages of the work. Here the record of achievement is somewhat better although far below a satisfactory level. Catchment committees and Panchayat Committees have been formed as well as a number of user groups. People's involvement is being obtained now at the planning stage and has been a major effort of the project since its inception. Early meetings were conducted at Gorkha in 1981. Less satisfactory has been people's participation in implementation. The team detected a very strong attitude of "Let RCUP do it" during its field tour.

In order to get a better overview of project accomplishments in the integrated field work, those component rated most relevant to the project purpose of soil, water, and plant conservation field activities were selected from the individual component evaluation section and summarized in Table IV-A. A review of these ratings quickly illustrates that these field activities are high in technical soundness, moderate in institution building and potential impact, moderate to low in people's participation, and low in integration with other project activities. This table does not tell the entire story for field activities because other activities also contributed to the total effect of RCUP. The payment of all costs for such practices as trail improvement and drinking water for example, undermined traditional cooperative work systems and the ability of RCUP and other line agency programs to obtain people's voluntary and cost sharing participation.

Other than the extension component, all of the highly relevant components (to project purpose) are actually very low in integration with other resources. The argument can be made that a field program that spreads out individual component activities over the entire project area without integration of the highly relevant project components is an effective way to reach many more people. The evaluation team rejects this argument on the grounds that although some practices can be spread rapidly in this manner (e.g. Napier

Grass) the whole project rationale is based on integration and in fact the real solutions to the problems of the Nepal hill farmer are related to the integration of livestock, forestry, agriculture and soil conservation management. The evaluation teams' interpretation of what is required is that first a model watershed approach must be developed with local people and in such a way that these people derive a clear benefit from the approach, then it can be spread to other areas with a major extension effort. The problem of lack of integration was noted at the start of the project in a memo from Mr. Brennen of USAID to Mr. Joshi of HMG on 3/13/81:

The plan does not contain an overall schematic diagram which shows the appropriate commencement of sub-projects and the relationship of all sub-project activities with other sub-projects.

At the end of 5 years of project activity the evaluation team found no plan for integration in RCUP.

Based upon the figures in table A-1 in the appendix the target for watershed improvement during the 5 year project was 32,224 ha. This includes plantations, terrace improvement, community water source protection, panchayat protected forest, forage crop development, pasture development, range management, national forest grazing management, improved agronomic practices. Achievement was 23,100 ha. which comes to 72%.

The target for forest planning was 64,976 ha. Achievement was 60,148 ha. Only 950 ha. of forest plans were implemented.

Based on the above figures, 23,100 ha. of the 500,000 ha. in the watershed were directly impacted. This amounts to 4.6% of the watershed areas.

Table IV-1

SUMMARY RATINGS FOR HIGHLY RELEVANT FIELD COMPONENTS

PROJECT	COMPONENTS	R	C	T	I	P		
		E	O	E	N	O		
		L	S	S	T	T		
		V	T	O	U	I		
		A	E	N	R	N		
		N	C	D	A	B		
		C	.	E	I	L		
		E	.	S	O	D		
				S	N	G		
Forestry		H	M	M	L	M	M	L
Watershed Management/ Soil Conservation		H	M	H	L	M	M	M
Agriculture Improvement/ Horticulture	1	H	ND	H	L	H	M	H
Range Management/ Livestock Improvement	2	H	ND	H	L	L	L/M	L
Inventory & Monitoring		H	ND	M	L	L	L	L
Extension		H	ND	H	M	H	H	M

H = High M = Moderate L = Low ND = No Data

1 - Emphasis on forage production, crop residue utilization, and soil management practices.

2 - Emphasis on range/pasture management

NOTE: Please see the next page for a further explanation of headings.

Explanation of Headings for Summary Ratings of Field Components

(for table on previous page)

- RELEVANCE - Relevance of the project component to the original project goals as stated in the Project Paper
- COST EFFECT.. - Cost Effectiveness in achieving project goals as judged by comparison of possible approaches or in some cases from the SECID Cost/Benefit Study
- TECH SOUNDNESS - Technical Soundness of the treatments employed, regardless of whether or not they were directed toward the original project goals
- INTEGRATION - Integration with other resource management activities and line agencies
- INSTITUTION BLDG - Institution Building pertaining to the strengthening of line agency programs and local organizations
- POTENTIAL IMPACT - Potential Impact of the component activities as conducted on total project area.
- PEOPLES PART.. - Peoples Participation in project decision making and project activities as well as in related private initiatives

APPENDIX - A

1. Introduction

The component evaluation is divided into the project components as defined in the Project Extension Paper at the request of USAID. A summary table of targets and target achievements (Table A-1) is used as a basic reference.

The components of the field program are tied to the implementing agencies. The RCUP budget for both HMG and USAID funds given directly to HMG (not thru SECID) are presented in Table A-2. Not included in these component costs are the USAID/SECID technical assistance contributions. These are not broken out by field components but in total represent approximately \$ 4.2 million.

2. Evaluation Assessment

(Sections presented in the following order)

- Watershed Management/Soil Conservation
- Forest Management
- Range/Pasture and Community Livestock Development
- Agronomy/Horticulture
- Institute of Renewable Natural Resources
- Turn-key Construction
- Fisheries
- Local Resource and Conservation Fund
- Extension
- Research
- Ministry of Forest Training Wing
- Inventory and Monitoring
- Women in Development
- Energy
- Irrigation
- Drinking Water
- Participant Training

WATERSHED MANAGEMENT/SOIL CONSERVATION

1. Evaluation Setting

The USAID - SECID contract calls for a watershed program to focus on upper drainages and protection of community water supplies. Two specialists - a hydrologist/meteorologist and an agricultural engineer - were to be assigned to the RCUP Central Office to work with the Water Supply and Sewerage Department, MPLF and the DSCWM.

Watershed Management as a concept used throughout the project involves both a specific set of practices as well as the potential unit of focus for all activities in the project. This distinction is often lost in planning, implementing, and evaluating the various facets of project activity. This problem is discussed in detail in the overall project evaluation section of this report. Here attention is given to the specific practices designated by the project as Watershed Management/Soil Conservation practices.

The two catchment areas selected are large basins with a wide range of ecological zones from hill zones to very high elevation snow - covered regions. The Daraundi catchment is 795 sq.km. in the Transition and Middle Mountain zones with excellent to good watershed condition 1/. The Kali Gandaki basin is 4,120 sq.km with the upper Mustang Basin listed in fair watershed condition. The lower portions are rated as excellent to good condition. The Upper Mustang is not open to foreigners. These watershed condition designations are based on reconnaissance surveys and are meant to index general conditions over broad ecological units. It does not mean that critical areas of relatively smaller extent do not exist within these broader units. It does suggest that for the two watersheds used in the project special attention should be given to the identification of critical subunits.

1/ A Reconnaissance Inventory of the Major Ecological Land Units and Their Watershed Condition in Nepal. Ministry of Forest , Department of Soil Conservation and Watershed Management, 1980.

2. The HMG/SECID Program

The project selected two watersheds (actually large watersheds or river basins) to focus all project activities. Within these two basins the objectives of the watershed management component were given as follows (Implementation Plan):

1. Reduce soil erosion
2. Improve water quality
3. Reduce flooding
4. Sustain stream flow
5. Improve agricultural productivity
6. Reduce landslides.
7. Develop and disseminate resource information

The SECID briefing report lists the following objectives for the RCUP activities undertaken by DSCWM.

"1. To upgrade the socio-economic image of the rural community by proper planning and implementing the integrated approach.

2. To establish and develop the physical infrastructures for the continuation of resource management.

3. To augment the expertise on resource management in order to develop the management practices as sound as possible".

Again one can see the mixing of the two levels of interpretation of what watershed management is. The first two objectives relate to the watershed as an integrative unit for planning; the third objective relates to specific practices.

The specific practices involved in this component are:

1. Terrace Improvement
2. Trail Improvement
3. Community Water Source Protection
4. Major Gully Control
5. Catchment Pond
6. Road Slope Stabilization
7. Stream Bank Stabilization
8. Flood Plain Tree Plantation
9. Panchayat Nursery
10. Panchayat Forest Plantation
11. Community Fish Pond
12. Canal Improvement
13. Land Slide Stabilization.

The technical assistance inputs to this component of the project can not be clearly separated from other components. There were 30 months of a Hydrologist/ Meteorologist/ Catchment Adviser and 17 months of Range/Pasture specialist assigned to this component.

3. Evaluation Assessment

a. Target Achievements

The targets and target achievements are in Table IV-2. In general this component has done a reasonable job in meeting targets except that shortfalls exist in community water source protection (145 Ha. out of 200) and flood plain tree planting (50 Ha. out of 170).

b. Relevance:

The component is highly relevant to project purpose. The practices used appear to be appropriate for the project purpose and conditions existing. One exception to this general observation is the trail improvement works. This work is very high quality and expensive compared to the treatment required for soil conservation only.

c. Cost Effectiveness:

Limited data exists from which cost effective comparisons could be made. The SECID benefit/cost studies arrived at a similar conclusion for most of the conservation practices except for terrace improvement where the very limited data indicated a high (upto 2.5 to 1) social payoff but a much lower (but greater than 1) financial payoff. This greater social payoff is a common feature of conservation practices and is the basis for government cost sharing.

A general conclusion based on the sample of field practices observed by the evaluation team was that the project has done a good job in selecting low cost treatment measures with an emphasis on vegetation control, treatment of headwater areas, and selection of practices that require little maintenance.

d. Technical Soundness:

Those specific practices observed in the field appeared well designed and appropriate for the sites where applied. Exception to this general observation are the gabions installed in the Mustang District on the Kali Gandaki below Jomsom and some of the plantings on alluvial fans along the Kali Gandaki. The concern on the gabions is that they are being undermined by the river. The concern for the plantings is that they will be lost to flooding. Some loss of such plantings was observed from recent flooding but the damage was not extensive. Some terracing without

adequate drainage was also observed in the Gorkha District. One technical issue common to several departments involved in plantation work is the tendency to plant sites that would have very good regeneration if simply protected and natural generation allowed.

e. Integration:

There is some joint effort with forestry and livestock particularly in testing joint production of trees and fodder. Otherwise there was very little evidence of DSCWM working jointly with other departments at a given site although there are numerous examples of where DSCWM has given technical advice to other departments through the Catchment Conservation Officer.

f. Potential Impact:

Those practices that appear to have the greatest potential for impact on larger areas are the terrace improvement and vegetation control of erosion areas. The introduction of Napier grass along the Gorkha road is a classic success story. Farmers are now coming to these planted areas to obtain grass sprigs for use on their own farms.

g. Institution Building:

DSCWM by working through the Panchayat, and Catchment Conservation Committees is helping to build a solid base for peoples participation in future conservation activities. However, the staff of DSCWM are almost completely temporary and this leaves open to question the permanence of DSCWM and creates morale problems among employees.

h. Peoples Participation:

Same as G above plus the farmers cost sharing in terrace improvement. There is some problem with the soil conservation component that is common to most RCUP components. For most practices RCUP has tended to pay full cost and not require peoples participation in implementation via labor contributions. The linkage of conservation plantings to school programs in the Myagdi District is an innovative idea. Proceeds from the protected area will be used for school support.

4. Summary

The Watershed Management/Soil Conservation practices are generally well designed and appropriate for core project purpose. Catchment Conservation Officers cooperate well with other line agencies but there is little field integration of soil conservation practices with other components at a given site.

FORESTRY PROGRAM

1. Evaluation Setting

The climatic and resource conditions vary considerably among the three districts where RCUP is working. Mustang district differs most radically from the other two. It is in the arid, rain-shadow region of the Himalayas, has a higher average elevation, is windswept, and is subject to colder winter temperatures, thus the growing conditions are harsh and the landscape is overgrazed and barren. Warmer, wetter climate in the Myagdi and Gorkha districts is conducive to lush vegetative growth, but higher population densities have led to serious deforestation problems and erosion on steep, overgrazed lands.

The following excerpt from the Project Paper summarizes the RCUP/ HMG approach to alleviating these critical problems through its forestry program:

"In order to achieve community and national cooperation in attaining the forestry goals, RCUP will undertake three concurrent activities. First, the project will gain farmer support by emphasizing community plantings, community water supply protection and private and leasehold projects. Secondly, Panchayat and Panchayat Protected Forests will be developed as the mainstay of community wood and fodder production. Thirdly, attention will be directed to the development of National Forests. . . . Furthermore, it is recognized that the success of new forest programs depends on the simultaneous development of the National Forest."

2. The HMG/SECID Program

The forestry effort under the RCUP encompasses nursery development, seedling production, seedling distribution for private planting, plantation establishment, species trials, forest demarcation, forest protection, management planning for natural forests and plantations, extension workshops/seminars, and training programs for nursery workers, plantation watchmen, rangers and assistant rangers. While the Department of Forests (DOF) is engaged in all these activities, the Department of Soil Conservation and Watershed Management (DSCWM) also runs a number of tree nurseries, distributes seedlings for private planting, establishes plantations for erosion control and

land reclamation, protects the plantations by fencing and watchmen, and provides irrigation where necessary for plantation establishment. After they become established DSCWM plantations are turned over to the DOF for management. DSCWM nurseries are in the process of being turned over to DOF.

The Department of Agriculture (DOA) also operates two central and six satellite nurseries for vegetables and fruit trees. Often DOA will utilize space in DOF or DSCWM nurseries for fodder tree and fruit tree production although in a few instances the situation is reversed with DOF and DSCWM utilizing DOA nursery space.

The primary focus of the RCUP/HMG forest management effort is directed toward panchayat forests, panchayat protected forests, national forests, and floodplain plantation management.

3. Evaluative Assessment

a. Targets and Achievements (see table A-1)

Targets in the Project Implementation Plan relevant to forestry are to establish nurseries, to plant 2,130 hectares, delineate 7,513 km. of forest boundaries, distribute 493,100 seedlings, to prepare and implement 58,963 hectares of national forest management plans, and prepare and implement plans for PPF. These were ambitious targets to achieve given the problems of understaffing and the difficulty in starting such a massive effort in a remote area. Consequently many of the forestry efforts fell considerably below target.

b. Relevance

The forestry program is highly relevant and important because a major part of the watershed area, if used according to its capability, should be in forest.

In the Project Paper, the management of National Forests and Panchayat Protected Forests was considered to be highly relevant to the success of the overall forestry effort.

c. Cost Effectiveness

Due to the difficulty of sites and frequent flooding damage, floodplain plantations are more expensive to establish and maintain. Since the primary purpose is to anchor the soil and prevent further erosion, the value of fuelwood produced is only a small portion of the benefits to be derived.

The SECID Benefit/Cost Studies have made a very fair and thorough assessment of the benefit/costs associated with the establishment of plantations and the management of panchayat protected forests and national forests. It is clear from these studies that forestry efforts are worth undertaking despite the problems encountered. Unfortunately, when it comes to analyzing the cost/benefit of the RCUP/HMG forestry program, the lack of reliable basic data makes the calculations more of a theoretical exercise (see section on Inventory & Monitoring).

Labor and fencing are two of the most costly items in plantation establishment and forest protection. In the effort to reach project targets quickly, more was spent for labor and fencing than was necessary. This problem has been realized by project management and it is expected that steps will be taken to reduce the use of fencing and costly labor as they have been for the Nepal Hill Community Forestry Project.

The delay in implementing management and utilization programs in National Forests and Panchayat Protected Forests is foregoing a good opportunity to show immediate economic and silvicultural benefits from good forest management.

Expenditures in the RCUP Forestry sector as of July 15, 1985 were 18,226,378 rupies (\$1,060,000) from an allocated budget of 26,435,000 rupies (\$1,537,000) - (SECID/RCUP Evaluation Briefing Book)

d. Technical Soundness

Technical problems are created by the pressure to fulfill targets, late funding releases, understaffing, and insufficient technical support from the central RCUP office.

The forestry program has had weaknesses such as nursery overproduction, late plantings, poor selection of species for some sites, improper site prescriptions, and inadequate maintenance and protection of some plantations. A major technical criticism is the use of expensive, high maintenance barbed wire fencing to protect plantations from grazing. They consume large quantities of wood for posts and are often seriously breached within a year or two after erection. In many instances stone fencing has been used and this is recommended where fencing is an absolute requirement.

Earlier this year a 20 year flood damaged many of the floodplain plantations along the Kali Gandaki. This made a poor impression on the evaluation team during its field inspections, but if the plantations have a few years to become established prior to the next major flood, the losses will be significantly less.

There is some question as to how well the plans which have recently been completed for the National Forests can be implemented as they may be too theoretical to be practically applied.

e. Integration with Other Project Components

Some integration was occurring in Galeshor, a subcenter location just north of Beni. DOF was sharing DOA nursery space and had established a panchayat protected forest on the slope above the village which served to protect the water source for a fish pond. Also some grass harvesting was occurring in DOF plantations, but in general integration with other watershed management activities has been poor.

f. Institution Building

Training of personnel has been the primary means by which the RCUP has strengthened the Department of Forestry, although many of these people's positions on DOF staff are classed as temporary, contingent upon continued RCUP funding.

g. People's Participation

People's participation in forestry has been limited. The forestry program got underway almost 2 years behind schedule, consequently there was great urgency to establish plantations as rapidly as possible in order to meet targets and show tangible results. In the rush, local people were not involved in decision making and most labor for plantation establishment was hired or at least cost shared.

If people's understanding and cooperation can be increased, the cost of establishing, maintaining, and protecting plantations can be reduced by shifting responsibilities to the community and private sectors.

The following transcript taken from a village meeting by the Annapurna Conservation Study Project echos comments heard by this evaluation team.

"We villagers are skeptical of the Department of Forestry/RCUP because of their impromptu and poorly organized programming. They typically release tree seedlings for transplanting late, in the fall, after planting season has ended. They have not planted nearly as many seedlings as they claim they have."

This quote may be a bit harsh on the forestry effort, but it illustrates that there is a long way to go in gaining peoples' confidence and participation.

A good example of people's participation is in Jhong (Mustang district) where a cooperative of 17 families, using local poplar cuttings and traditional planting methods established a plantation earlier this year with RCUP financed fencing and irrigation.

h. Potential Impact

Potential plantation impact can be calculated by projecting annual nursery production to hectares successfully planted. Again the problem in doing this lies in the unreliability of basic data on forestry achievements.

Should RCUP funding end at this juncture, the nursery/plantation and forest management efforts would be severely curtailed.

Extension efforts and seedling distribution will produce future benefits which are valuable but difficult to measure.

i. Summary of Problems and Constraints (SECID Briefing Book)

The first year & half of the project period was spent in setting up the important needs for the execution of the program, such as building up the manpower, selection of site, and release of funds.

Variation in ecosystem within the same district.

Time consuming legal procedures in the establishment of PF and PPF.

Transportation of materials necessary for nursery and plantation works on a timely basis is difficult.

Frequent and long absence of HMG personnel from field posts.

No specialized unit in the project area to test the purity of the seed.

Manpower (specifically understaffing) not adequate to accomplish the target of forestry

Supervision trips by central staff (concerning department) are either non-existent or very rare.

Report forms are somewhat incomplete, do not respond to various stages of cultural operation and measurement performed in the planted area and National Forest.

4. Summary

While the RCUP aided forestry efforts have been properly directed toward alleviating critical shortages of fuelwood and fodder trees and reducing soil losses due to erosion, these efforts have employed costly fencing and labor, unreliable reporting practices, and have yet to significantly involve the local people.

RANGE/PASTURE MANAGEMENT AND COMMUNITY LIVESTOCK DEVELOPMENT

1. Evaluation Setting

Presently in Nepal serious degradation of vegetative cover is occurring over large areas of land which are subject to uncontrolled grazing.

The Project Paper states:

"Integration of on-farm production of animal feeds with forage obtained from range land and pasture is the approach taken to balance feed supplies and animal numbers. A pasture development and range management program will have a positive influence in gaining increased soil fertility, decreasing forest encroachment by livestock, protecting watersheds and conserving soil and water. Animal husbandry improvements will substantially aid in augmenting outputs of livestock production. Livestock improvement is an indispensable part of the RCUP, since the majority of the villagers supplement their economy with livestock rearing.."

"At present, it is estimated that only 50-60% of the livestock feeding requirements are being met. In order to raise this level RCUP's approach will be to integrate forage production into the existing cropping cycle. The goal is for more intensive land use based on careful rotation practices".

A general background paper on livestock in Nepal goes on to state:

"In terms of livestock numbers Nepal has one of the highest per capita number of livestock, that is about 5.8 animals per household".

SECID Briefing Book states the problem on Range and Pasture Management like this:

"There is a shortage of appropriate technologies for Range and Pasture Management. This is the field where maximum attention has to be paid. In fact it could not set the desired importance in DLDAH activities".

2. The HMG/SECID Program

In the P.P. and contract paper this component was named as Range Management and very small program of animal husbandry was mentioned. The following program was written in the contract paper:

"Efforts will be made to balance field resources and numbers of animals. The RCUP will also emphasize more intensive land use based on careful rotation practices and management of grazing lands".

"The RCUP range management and pasture development program also includes work in the Panchayat and national forests through the planting of fodder trees and grasslands under trees. Project activities in animal husbandry will also be included".

"The DSCWM will be responsible for supervision and implementation of programs in range management. The Department of Agriculture (now DLDAH), under the general direction of the Director General of Agriculture, will execute the improved pasture management and animal husbandry program".

"The contractor will provide a range/pasture management specialist to assist GON counterparts in the DSCWM and the Department of Agriculture in all aspects related to the organization, operation, evaluation and training in the fields of range management, improved pasture development and related conservation work. There are no large ranges in Nepal. The emphasis is on improving high altitude, intensive pasture management on small plots of land.

This component has been handled by veterinarians in higher level in the district and there are no range and pasture management specialist.

The Project Implementation Plan named this component as Community Livestock Development and list its specific objectives as such:

- (a) Improve feeds and feeding to reduce impact on resources and increase production per animal unit.
- (b) Improve animal health to increase production per animal unit.
- (c) Upgrade livestock production through genetic improvement.
- (d) Provide new ideas on animal husbandry and land management through extension, demonstration, and research.
- (e) Provide credit to upgrade livestock and obtain equipment.

Some range management program such as distribution of fodder tree saplings, range management, forage crop development and pasture development has been in each district.

The DLDAH has organized different types of training programs for the farmers to provide them technical knowledge in Animal production. The main training programs

are village level animal health workers training. Pasture and fodder development training, and livestock management training. (See Table A-1).

Considerable increase in animal production has been achieved through providing services, such as drenching, dipping vaccination, dusting, and genetic improvement.

The genetic improvement program has distributed improved livestock in the districts. This cross breeding program is executed under the supervision of the livestock development center and sub-centers. In Mustang district improved breed of ass has been distributed in order to produce better mules. In order to get a better yield of milk and meat, murrah buffalo bulls have been imported and distributed in the catchment area.

Project expenditure during five year period for DLDAH is \$ 708,000 out of total budget \$ 1,040,000 allocated.

3. Evaluation Assessment

a. Targets

The achievements in livestock improvement exceeded the targets. Some minor activities which have been mentioned in the implementation plan were either deleted or not done by DLDAH. Range/pasture development has been neglected and very little work has been achieved. (See Table A-1)

b. Relevance:

There is not much grass land in Gorkha and Myagdi. Animals are allowed to graze the forest land whether situated in river catchment areas or easy terrain. Deterioration of catchment areas is caused by animals. Reduction of inferior animals and stall feeding instead of grazing are directly relevant to the Resource Conservation Program. Hay making techniques have not been addressed by RCUP, but are quite relevant in hill districts. According to survey, grasses and fodder are surplus during rainy season, but lacking in the dry season.

c. Cost Effectiveness:

A task force has been created to find out the cost effectiveness of range management and livestock improvement by RCUP. Unfortunately the necessary data on forage and animals is not available.

Despite the lack of data, fodder tree planting on private land and the establishment of new varieties of grass such as Napier appears to have been particularly cost effective based on their ready adoption by farmers.

d. Technical Soundness

The distribution of fodder species to plant in the private land is sound, so is the distribution of napier grass. Plantings of fodder species in community land along with grasses are quite successful. In Marpha, the hay making is successful and technically sound.

e. Integration with Other Activities:

In the initial stage of the project, the program did not do well. Most of the extension workers were not adequately trained to man the sub-centers of the DLDAH. Although personnel from DLDAH frequently meet with personnel of other line agencies there are only a few places where joint activities are conducted at the same site, one example is in Gorkhali Panchayat in Gorkha.

f. Institutional Building

RCUP has constructed buildings in District headquarters as well as sub-centers. Animal health department has extension workers in the field but range/pasture management has no extension workers. On the range management side the institution building is unsatisfactory.

g. Potential Impact

Villagers are looking for napier grass and fodder species. Demand is exceeded the production. In one case of improved range land, villagers are allowed to cut the grasses twice a week in the rainy season which is observed during field trip.

h. People's Participation

People's participation has been good in genetic improvement animal health, and awareness of the benefits of stall feeding, but generally lacking in controlled grazing and range/pasture improvement.

4. Summary

The main emphasis has been in fodder tree planting, animal genetic improvement, and animal health due to the presence of a veterinarian as chief of the district DLDAH. Very little has been accomplished to date in range and pasture management despite the widespread needs are potential gains to be made.

AGRONOMY/HORTICULTURE

1. Evaluation Setting

From the beginning, agronomy and horticulture were considered important components of the RCUP program and are so treated in the Project Design Summary/Logical Framework. The narrative summary is replete with references to increased agricultural production; protection and restoration of the soil, water, and plant resource base, and increases in crop yields. The Magnitude of Output expected to be objectively verified was "yields/hectare of farmland increased by 15%." The Means of Verification included visual observations, evaluation, and project monitoring. While the Implementation Targets were supposed to be included in the Project Paper's Implementation Plan, the plan itself did not specify type or quantity targets.

Project expenditures over a five year period for agronomy and horticulture were contained in the revised Project Paper. AID was to finance local consultants, a Local Resource Conservation Coordination fund (later deleted), commodities, project allowances, and other costs, all amounting to US\$ 1,244,800. HMG/N was to provide the equivalent of US\$ 704,000 for professional/support staff, credit, commodities and other costs. An inflation factor of 12% per year and a contingency factor of 10% per year was projected for both AID and HMG/N contributions. Thus the total amount available for the RCUP agronomy and horticulture component was US\$1,948,800 plus 22% per year, or an order-of magnitude of over US\$ 2,370,000.

While the PP concisely describes the climatic, geographic and demographic conditions in each of the districts, it does not indicate the level of HMG/N agronomic/horticultural activity in the target areas, or what was to be incremental as a result of the RCUP Project. (This may be contained in the voluminous annexes to the PP). Other than the work underway at Marpha Farm in Mustang and the Lumle Agricultural Center in Myagdi RCUP has represented a major step forward in HMG/N agronomic/horticultural activity.

In April 1983 the Special RCUP Evaluation Team found the situation unchanged in terms of declining agricultural productivity. The team described the conditions in the hills this way:

"...relatively little single crop or market dependent commercial specialization in agriculture is found among the farmers of the hills. That is, most of the farm families produce or find and harvest most of the commodities and products required to satisfy their basic needs..." Limited commodities flow into the hills from outside, partly because of the difficult topography, lack of infrastructure, and a lack of income or capital to invest in outside or consumer goods;.... To satisfy basic needs, each farm family must

utilize all major sectors of the mountain ecosystem; the bottom land and side slopes for crop production; steeper slopes for pasture, and trees; and forest, where they can be found, for fuel, fodder, and construction wood." (pp.42,43) The Special Evaluation Team took the view that for agricultural considerations an integrated approach was essential. From their perspective, however, after only two years of project implementation, it was premature to assess project methodology. They stressed that "... RCUP's purpose was to demonstrate methods which might be utilized and to engage the energies of the government and local citizens for the long term effort." (p. 10)

2 . The HMG/SECID Program

To achieve program objectives HMG/SECID chose to pursue a seven part program which involved, in the main:

a) Strengthening agricultural extension by establishing new professional staff positions (16) and new extension sub-centers (15) in the RCUP region.

b) Putting spaces acreage in improved varieties of paddy, wheat, maize, vegetables, potatoes and fruits (12,033 hectares).

c) Placing seed multiplication programs on farmer fields to overcome supply shortages (no target figures).

d) Distributing 'minikits' to help agricultural extension workers, researchers, as well as farmers shorten the time for variety selection and related technology (7,989 minikits distributed).

e) Undertaking Pre-Production Verification Trials (PPVTs) and varietal trials on farmers fields to demonstrate new versus traditional cropping practices (66 PPVT trials, 88 varietal trials). Much of this was done through ICP assistance

f) Establishing central (2) and satellite (6) fruit and vegetable nurseries, orchard demonstrations (11 plots) and fruit sapling and vegetable seed distribution to farmers through DOA offices (no target figures).

g) Providing training to farmers to become leader farmers (297), to become Agricultural Assistants who serve as the bridge between farmers and DOA professionals (204), and in-service training for junior DOA professionals (186).

The program also involved substantial investment in Marpha Farm in Mustang District. This complex is an HMG research, demonstration and training center principally engaged in fruit and vegetable farming. In addition to staff salary support, RCUP provided the Farm with a greenhouse, a

training center, housing units for RCUP-paid staff, a cold storage area, a working shed, threshing floors, and small-scale irrigation assistance. Marpha farm is a cross-cutting activity, and thus not readily compartmentalized in any one of the above seven project components, (From field observation and general reputation, the Farm is an important success and RCUP funds are being used to good effect.)

A difficulty in relating the HMG/SECID program to what was initially contemplated in the revised PP is that there does not appear to be a correlation between revised PP financial projections, modifications thereto, and approximate expenditures for the HMG/SECID program. (The financial information available is essentially the annual budget/expenditures of the line agencies for all activities under the program. There is also information about Activity Targets, but no link between activity accomplishment and cost).

3. Evaluative Assessment

a. Target Achievement

Achievements have exceeded the targets in introducing improved variety and practices, minikit distribution, farmer's, JT and JTA training. Whereas the achievements in the horticulture program have been low except at Marpha farm. (See Table A-1)

b. Relevance

Relevance to the Project Purpose depends on whether the primary purpose of the project is resource "protection" or "production". If protection then for example the agricultural program should have focused on fodder production as contrasted to food production. Given the extent of soil erosion, land utilization patterns, and similar considerations, clearly any hill resource conservation effort in Nepal should take into account agricultural practices, and what can be done to ameliorate conditions. Generally speaking, the seven point program is responsive to program objectives.

Various studies done, such as the recent IDS study on agricultural marketing, suggest that in Nepal the key constraint in expanding the technical horizons of farmers, in increasing yields, in making agricultural inputs available on a regular basis, is the transportation network. As the RCUP benefit/cost study puts it, "Until the day that roads are built into the hills (if indeed this is even feasible), emphasis should be placed on improving local seeds and methods of producing fertilizers locally. The weak link in past programs has been the dependency upon government extension workers and the AIC." Particularly with respect to the input side the study goes on to say

that "Greater reliance on the market and less government control over market prices could improve the situation of agriculture".

c. Cost Effectiveness

It is difficult to assess the cost effectiveness of agronomy interventions in Nepal with a high degree of confidence. The problem of data collection quality is endemic in Nepal and is not RCUP specific. The SECID Benefit/Cost study made a useful effort in trying to grapple with this problem and provide component insight. Their study recognized that theoretical assumptions were far removed from actual field conditions and made adjustments for it. While one may disagree with the figures incorporated in the downward adjustments, the study provides an analytical framework and a benchmark for future testing. Data for the RCUP horticulture component is even more hypothetical because fruit trees are not yet bearing. The study recognized this point. Distribution of fruit saplings and information, however, is one of the most popular RCUP programs. Nevertheless, there appears to be no way to gauge whether the mix of sub-activities was most responsive to RCUP objectives or were driven by other factors; or indeed how much of the over \$ 2.3 million budgeted for agriculture in the revised PP was actually spent on agriculture, or in the most cost effective manner. We do have some idea of what choices were made and 'what might have been.' The SECID Briefing Book notes that

"There is a lack of improved technologies for many important hill crops. This obviously is the case for such crops as grains, legumes, oilseeds, finger millet, barley, naked and barley for which there is a minor research support base in Nepal. This has hampered launching production activities in these crops."

As indicated above, the PP described RCUP as developing programs which focus on improved varieties of these very same crops.

d. Technical Soundness

The various parts of the program are conceptually sound. The fundamental question is whether the program can be effectively implemented. A constant theme articulated by many during field observations was the need to upgrade the training of those whose task it is to actually bring the program to the farmer's fields; and that timely supplies of inputs were a constraint, impeding the ability of DOA professionals to follow through with activity commitments.

e. Integration With Other Project Components

Integration of the agronomy/horticulture component with other RCUP activities has been weak. Paraphrasing SECID's Agriculture Briefing paper, while RCUP is described as an integrated project, integration in program planning, implementation of plans on a team basis does not exist. Field observations suggest coordination is better in the districts and regions than in Kathmandu. The programs of the line agencies are almost entirely target-oriented, responding to parent Department needs, not RCUP objectives. Any coordinated effort in crop and livestock extension or research activities, terrace improvement linked with crop development, or irrigation projects linked to production/testing objectives were either coincidental or the effort of a few line agency professional in the field.

f. Institutional Development

Substantially strengthening agricultural extension presence in the RCUP area, establishing demonstration orchards, and providing training to farmers, are all important institution building efforts. RCUP's contribution to Marpha Farms is a separate category of institutional development. Operating in the remotest District (Mustang), it has had substantial impact on fruit growing over a wide geographic area, and is similarly having an impact on vegetable growing practices.

g. Potential Impact

Agricultural improvements, both in crop yields and agricultural practices, can substantially reduce soil erosion and improve water resource utilization. Given the size of the geographic area, time distances, the variety of crops grown and growing conditions, the limited resources available under RCUP could only modestly affect the problems of the agricultural sector. The Mission is recognizing this reality in its decision to fund a separate agricultural research project which will include parts of the RCUP region. However, the methodology tested has reasonably good prospect of being replicated elsewhere, with additional resources. Farmers have adopted new crops improved seeds and other measurements, promoted by this component.

h. People's Participation

Agriculture and people's participation are almost synonymous in the RCUP region. Only a small percentage of the population does not farm in some manner, mainly on small farm plots. Farmer leadership training and extension activities are among the successful people's participation efforts in this RCUP component.

4. Summary

Agriculture is an integral part of resource conservation in the RCUP region. While the seven part program is responsive to agricultural improvement objectives, it is difficult to determine which elements were most effective. The magnitude of the problem compared to RCUP resources available suggest the subject is better left to a separate project, which the Mission is doing, hopefully including RCUP infrastructure in the new project implementation done when there is strong leadership, a concentration of effort, and a consistency of support.

A. INSTITUTE OF RENEWABLE NATURAL RESOURCES

1. Evaluation Setting

The contract between USAID and SECID dated February 6, 1981 calls for the development of an Institute of Renewable Natural Resources (IRNR) at the new Pokhara Campus of Tribhuvan University. The campus is being constructed with support from the World Bank. This activity is aimed at increasing the capacity of the GON to provide the technical and administrative skills to carry out resource conservation management. Nepal's 7th five year plan estimates the need for 3,045 additional trained natural resource managers and technicians to fill HMG positions in the forestry sector by 1990.

Two Training Centers of Tribhuvan University - The Institute of Forestry at Hetauda and the new Pokhara campus are to be placed under the IRNR. As of the writing of this report the construction at Pokhara is on schedule and will be completed in May 1986. The plan is to move faculty and equipment to Pokhara during the summer of 1986. The Pokhara faculty are now located at Hetauda and the first class of 23 BSc students, including the first woman student, is completed. The IRNR name has not been officially recognized by Tribhuvan University and currently both the certificate level forestry program and the B.Sc. program are operating under the authority of the Institute of Forestry of Tribhuvan University at full capacity. IRNR/IOF will produce 220 certificate level graduates and 25 to 30 B.Sc. level graduates each year.

The original contract called for assistance in the following areas:

- (a). Spatial Planning
- (b). Curriculum Development
- (c). Department Teaching
- (d). Library Development
- (e). Research and Development
- (f). Outreach Planning (extension) Training.

The 1983 special evaluation team reported that the program had made "excellent progress" in curriculum design and initiation of the degree granting program. Concerns were expressed that adequate attention was not given to training in local participation or crucial issues in management and coordination.

2. HMG/SECID Program

Total expenditures incurred by the project from 1980-1981 to 1984-1985 HMG fiscal years were \$ 3,660,791.

The professional manpower inputs to the IRNR from RCUP as of the 1984/85 project year are as follows (from SECID, SAR-8):

<u>Title/Responsibility</u>	<u>Months</u>
Deputy RCUP Co-Manager/Assist. to Dean	42.5
Civil Engineer	22
Soil and Water Conservation Specialist	32
Resource Economist	27
Curriculum Consultant	0.5

Total	124

The 1985/86 Bulletin of the Institute of Forestry/Institute of Renewable Natural Resources lists 32 Nepali faculty and 8 expatriate faculty. Eight faculty committees are operational. The new Pokhara campus to be completed in 1986 will contain housing for 400 students as well as faculty housing and an impressive array of classroom, laboratory, library, administrative and workshop facilities. New Enrollment in the certificate program and in the B.Sc. program during the last 3 year averaged 110/year and 36/year. The goal when the Pokhara campus is finished is 220 and 40 per year.

3. Evaluative Assessment

The evaluation process involved visits to both the Hetauda and Pokhara campus. The newly developed curriculum was reviewed; group meetings with faculty and students were conducted independently; individual students and recent graduates were interviewed; and facilities, learning materials, and equipment was inspected. Field research programs both at Hetauda and in outlying areas were visited and reviewed.

a. Target Achievement

The basic target for this component was 114 months of technical assistance. This target has been exceeded.

b. Relevance

The project relevance of this component is high because trained manpower is a major limiting factor in getting an effective natural resource conservation program in Nepal. The key assumption made is that the 3,000 people to be trained by IRNR under the current 5 year plan will be employed in effective resource programs with adequate fiscal and policy support.

c. Technical Soundness

Based on the above, good progress was observed in 4 of the 6 areas required by the contract. The areas that still appear weak are: (1) teaching and (2) research and development.

The teaching problems are related to faculty, student, and facilities issues. There is a general impression that courses are still too text-book oriented and not sufficiently field oriented and practical. An even more serious problem relates to frequent absence by some professors without adequate arrangements to backstop or cover for such absences. There is also some problem with faculty morale and commitment. This may be related to the large number of faculty whose homes are in line agency department's instead of being members of Tribhuvan University.

There is considerable concern among the faculty about the science background of those B.Sc. students without a diploma in science or related areas from Tribhuvan University. There is a provision for students with a diploma in general science to take a makeup course in natural resources and then complete the B.Sc. program in two years. There is not a comparable remedial program in science for those students entering the B.Sc program with a certificate from IOF-IRNR plus 3 years of practical field experience.

The problem of facilities in relation to quality of teaching in that many books, much lab equipment, new classrooms, and support facilities and equipment are needed. These will be provided in part with the move to Pokhara.

The weakness in Research and Development, relates primarily to the newness of the B.Sc program and the lack of adequate research funding for student and faculty research.

A course on Human Resource Development and several components on community forestry and social concerns has been included in other courses to respond to the 1983 evaluation recommendations on extension and management.

d. Integration with Other Project Component

RCUP has funded 4 research projects using 6 IRNR and 2 IAAS faculty. Also a laboratory and staff quarters for IRNR research are included in the Gorkha Phase I complex.

e. Cost Effectiveness

The issue of cost effectiveness is a difficult one in educational endeavors. SECID has made a comparative analysis of the cost of sending students abroad versus training in Nepal. A comparative advantage of 1.4 to 1 was found for training in Nepal 1/. The other cost effectiveness concern relates to use of faculty time. Although specialization is necessary it does not preclude some sharing and backstopping of courses especially at lower levels of instruction. Apparently there is very little such activity at present.

f. People's Participation

In this component people's participation is mostly an output rather than an input. Training people to solicit such participation is emphasized at several places in the curriculum. It is not clear whether, innovative approaches such as radio, comic books (e.g. FAO materials) and school participation in community conservation projects are being taught.

4. Summary

Very good progress is being made on this component. The evaluation team believes that, in the long term, this will be the one of the most valuable component of the RCUP Project. Some strengthening is needed in all areas but teaching quality and research and development need special attention. The contractual requirement of 114 man months for this activity has been met. Furthermore the technical assistance provided appears to have met the specific needs of IRNR and been of good quality.

1/ Benefit/Cost Studies: Nepal, RCUP, Sept. 1985.

TURN-KEY CONSTRUCTION

1. Evaluation Setting

Construction elements are involved in many RCUP project components, with all HMG/N line agencies, the national university and SECID engaged in some aspects. Differentiating the type of construction provides an understanding of the dimensions of the task. These are: a) the building construction program which includes design, construction, site development, and equipping of 174 structures, the primary responsibility of SECID, b) 21 irrigation and 21 drinking water projects, for which SECID has the feasibility and design responsibilities, while construction was the responsibility of the four HMG/N line agencies, c) HMG/N for account construction for project related activity such as river control, slope stabilization, trail improvement, earth-filled impoundments, d) small construction undertakings to facilitate field activities, such as range pasture fencing, sheepsheds, threshing sheds and floors, and green houses, done under SECID program activities, and d) SECID engineering advisory assistance for the construction of the new Institute of Renewable Natural Resources campus. This paper will address building construction operations, but many comments may be pertinent to other construction components as well.

The Project Design Summary/Logical Framework properly treated the construction component as an Input in achieving other RCUP goals. The assumption was that the lack of housing and support facilities in the RCUP area was a key constraint in providing technical assistance to the outlying communities in soil, water and plant conservation. The PP's Summary and Recommendations "Project Issues" section capsulizes the matter this way: "A secondary issue involves the provision of an adequate infrastructure to accommodate the proposed decentralization field staff. RCUP recognizes that in order to have a positive environmental impact trained personnel must be village-oriented. This requires field bases. To address the issue the project provides for the construction of field facilities so that the staff can directly serve the people. HMG/N is to provide land for construction. The locations for, and strategy of constructing these facilities will be attended to as a first priority implementation activity." (p.11) Turn-key building construction was not separately projected in the Financial Projections portions of the PP. Apparently it was included in both the 'Commodities' and 'Other Costs' line items for AID, along with numerous other equipment, supply and construction procurement items. HMG/N projected expenditures were almost entirely under their 'Commodities' line item, and were primarily for the costs of land, and pre-construction rentals. The absence of a separate breakout for building construction activities, as well as the other construction elements funded by RCUP, has hampered

understanding of how much was intended to be allocated for the various construction activities and, the management of construction accounts. (With respect particularly to drinking water supply systems, there remains some confusion about sub-project water supply system commitments, RCUP sub-project construction in process, and how much money will be needed to complete activity in this area).

In January 1981 the Overall Management Plan was finalized. It described the plan for construction as follows:
"Construction The first phase in managing this portion of the project requires hiring professional Nepali architects/engineers to work with USAID/N engineers. Their initial tasks will include developing an overall construction scheme to coincide with project requirements." (p. 201)

In some respects, the turn-key construction program has been both the forgotten child and the all-too-visible child of the RCUP program. For example, the April 1983 Special Evaluation Team essentially never addressed construction planning, competence, or progress. Nor did they comment on the SECID Engineering Office, while at the same time reviewing the rest of the SECID technical assistance activity in some detail. In a sense the turn-key construction program has been treated by project managers strictly as an input, when in fact it evolved into much more, with substantial implications for the program as a whole.

2. The HMG/SECID Program

HMG/N had the lead role in determining localities for the District centers and sub-centers, while requesting SECID to assume primary responsibility for the design and construction of the 174 structures included under this program component. SECID selected three Nepalese Architectural and Engineering firms to do the design and supervise construction. Construction was performed by 27 Nepali construction contractors. HMG, AID and SECID all cleared and approved site locations and design. The entire building program was divided into two phases. Phase I involved major headquarters for RCUP line agency activities in each of the Districts. (Construction was underway in all three areas by Spring 1983) Phase II involved the widely scattered and remote sub-centers, the outposts for the main HMG/N line agencies engaged in RCUP projects. (Construction for this phase was underway in all three Districts by Spring 1984). Construction included not only erection but was generally understood to include site development--retaining walls, drinking water, threshing floors, pens for livestock, as well as building related equipment---lighting and bathroom fixtures, stoves, and some office furniture.

In 1985 SECID hired Louis Berger, Inc. to perform an independent professional technical audit of the turn-key building construction program. The audit identified technical areas for improvement but found the quality of construction generally exceeding that of local government offices and quarters found in rural Nepal.

3. Evaluative Assessment

a. Target Achievements

Of the Implementation Plan the project paper described (p. 16) "112 buildings" under the Forestry Management Component. This was further refined in the January 1981 Implementation Plan wherein 42 activities requiring 272 units was described.

b. Relevance

The basic rationale for the building construction program was that it resolved a key constraint to successful execution of the primary project objectives. The assumption was that provision of attractive living quarters, offices and support facilities would provide the necessary incentive to galvanize line agencies to expand their program in the RCUP region, and induce professionals to willingly accept assignments in remote areas.

Line agencies did substantially expand their programs over the five year period. They rented office and living quarters for personnel in anticipation of complex completion. Less responsive was the reaction of HMG permanent staff. From field interview and off the record discussions, it would seem that, while constructing accommodations are probably a necessary pre-condition in attracting professional staff, it alone will not be sufficient to have major impact on remote area recruitment. Better schools for dependents, substantially greater salary rewarded relation to living costs, improved access to quality health care, addition training opportunities, all play an important part in assembling an effective incentive package. That perhaps only one or two of the long term RCUP participant trainees were assigned to RCUP field posts reinforces the permanent staff's preconceptions, where opportunities lie in the line agencies.

A different relevancy issue is posed by the sheer size and qualities of the building construction program. Whenever a government undertakes a massive effort to house itself at levels well about the surrounding community, it in itself becomes a distraction. A detraction from mainstream program objectives and efforts, building construction program became the most visible and talked about aspect of RCUP. From the perspective of community attitude towards the project, this was counter productive.

The dilemma confronting project implementors is not an easy one and how to provide adequate facilities which will realistically attract personnel to remote areas, and at the same time be seen neutral in terms of community reaction. In the RCU Project the designers over emphasized the need to respond to line agency housing, office and facility support, and did not adequately take into account the degree to which a program of this sort would separate government staff from the surrounding community.

c. Cost Effectiveness

The total estimated cost for the entire turn-key construction effort in RCUP turn-key building construction is probably one of the largest hill region construction programs of its kind in modern Nepalese history. Experience gained in construction and contracting techniques, expansion of private sector construction capacity, utilization of local materials as substitutes for conventional construction materials, all were by-products of this undertaking. The construction phase was cost effective while maintaining high standards of quality, for example, the fact that an original contractor for one of the major District centers was replaced reflects well on those charged with implementing the construction program. Construction supervisors were prepared to delay construction progress to find the level of construction competence necessary to do a satisfactory job.

With limited supervisory staff and a myriad of sites, based on the designs approved by HMG/N, AID and SECID, and taking into account sites provided by HMG, the results are probably better than might be expected.

Approved designs in the Myagdi and Gorkha Districts had too much architectural flair, are impractical, and have complicated construction. A number of the sites provided by HMG were poor and either required or will require significant site development to protect against potential erosion and consequent structural collapse.

Although the construction is of high quality the evaluation team believes that adequate facilities to achieve the purposes of the project could be built at a far lesser cost. Therefore we would have to conclude that the building program has not been very cost effective.

d. Technical Soundness

The primary weakness was in the architectural design phase, both in terms of what was appropriate for the program in creative design, and in the architect's basic understanding of site purposes. Fault, however, cannot be laid entirely on the shoulders of the architects. HMG/N line agencies were

intimately involved in the design process, queried as to their needs, and required to clear off on the final design for their space. The problem was primarily inexperience in effective forward planning.

Innovative construction techniques were used during the course of the project. Maintenance of quality standards, sanitation issuance, inclusion of improved stoves provide some examples of modern technology introduced in the region. It is reasonable to expect some aspects will be replicated by private builders, and in fact this is already occurring. Further, the simple logistical task of hauling cement, support beams, and other building materials to the remote sites, and keeping track of activities, represented a major challenge.

e. Integration With Other Project Components

As mentioned, plans for the housing, office and support facilities involved the major line agencies who were asked to provide their requirements to the design consultants. Once the design was approved by all parties, linkage with other project components disappeared, for the most part, until the sites neared completion. At that juncture, some line agencies have re-evaluated their needs and proposed changes.

Some sensitivity to community impact of the centers and the need to provide similar services to adjacent communities, was demonstrated. For example, on occasion drinking water supply systems were provided to villages near sub-centers, thus reducing the disparity between government quarters and those of the local community.

f. Institution Building

There are two areas in which this component has contributed or potentially can contribute to Nepali institutional development. With the completion of the construction phase, in the three Districts there will exist a physical framework within which to better integrate, organize and involve HMG line agencies responsible for carrying out portions of a soil, water and plant conservation/utilization program. The secondary benefit is already realized, e.g. the expanded capacity and experience of Nepali architectural, engineering and construction firms to build in remote hill areas.

g. Potential Impact

Unless HMG/N line agencies are prepared to make full and effective use of the facilities, the potential impact of this component will be severely reduced. It will require both a staff and budgetary commitment to utilize the physical structures soon to be turned over to HMG/N.

h. People's Participation

This activity has not involved the local community in the usual sense. The local community has been reacting to the construction, as described above. However, if installations such as the meeting halls become community centers, much of the adverse reaction will dissipate over time.

4. Summary

The turn-key construction program should have been more carefully analyzed as to purpose and quality of design before commitment to this project component. Nonetheless, it is now rapidly moving to completion, and construction has been reasonably satisfactory, given the remote locations, level of expertise, and availability of building materials. The buildings have substantial potential to enhance HMG resource conservation/utilization activities, if HMG is prepared to make the commitment.

FISHERIES

1. Evaluation Setting

Nepal has many reservoirs, and could produce large quantities of fish if all of the reservoirs were utilized. Numerous natural and man-made reservoirs are being utilized by Department of Agriculture's, Aquaculture Development Project (DOA/ADP) in an attempt to maximize the amount of fish for improving nutritional intake and raising farmers' living standards.

Following are the broad objectives of the community fish ponds as stated in the SECID Briefing Paper:-

- a). to make use of water from these sources which is being uselessly drained out into the stream
- b). to reduce the soil loss caused by the extra runoff on the ground surface
- c). to introduce aquatic farming at those places for the benefit of the rural community.

2. HMG/SECID Program

Altogether US \$ 100,500 was budgeted for fisheries development. Separate data on the actual expenditures for this component is not available.

The RCU Project also envisaged integrating fisheries development as one of its components. Kulekhani Catchment, with production capacity of 2.7 tons was one choice for a site, but was deleted the final stage of the project preparation. [(Page 23, AID/RCUP Project Report) (PR)]. This substantially reduced the RCUP's fisheries development program. However, 20-30 hectares of multi-purpose impoundment and 35 catchment ponds for fisheries development and duck farming were included in the program.

3. Evaluation Assessment

a. Targets and Achievements

The total target for community fish ponds was 9, but was revised to 5. Only 3 ponds have been completed by the end of the project period and, among the completed ones, only one has been used for raising fish. The other two ponds, which are in Gorkha, have never been filled with water, because the irrigation canal has yet to be completed. (See Table A-1).

b. Relevance

Only one fish pond was visited by the evaluation team. This pond was constructed and is managed by the DSCWM since the productive storage and use of extra surface water is somewhat relevant to runoff and thus erosion.

c. Cost Effectiveness

No cost/benefit analysis has been done by the project for this program. Cost effectiveness in achieving the goal is very poor.

d. Technical Soundness

This component at first seems technically sound but it has some weakness such as lack of skilled manpower for running the program smoothly.

e. Integration

Little integration has been made with other RCUP components, although at Galeswor water is coming from a protected water source.

f. Potential Impact

According to the broad objective of the component there is good scope of potential impact if done properly.

g. Peoples Participation

In two ponds of Gorkha User's Group has been made. But no participation has been seen during the design and construction activities.

Although catchment ponds have been constructed, no fisheries development has been done according to the program. People's participation has also never been sought. Even, where peoples participation has been sought through formation of a User's Group, no program for fisheries development has been implemented. A statement quoted below gives a very bleak picture of the failure of this program.

"Let me recall the Chorkate Fish Pond at Chorkate Village Panchayat. This fish pond was constructed and a user group formed in December 1982 while the irrigation canal which was supposed to provide water is now under construction (in August 1985). The user group had nothing to do, but it was formed and the locals laugh when the term user group is mentioned", (M.Aryal, RCUP Briefing Report).

h. Institution Building

Nothing has been done in the institution building for this component.

4. Summary

The project could not achieve the target of constructing 5 ponds. This component has been deleted from RCUP and no further funds are available.

LOCAL RESOURCE CONSERVATION AND COORDINATION FUND

1. Evaluation Setting

In order to further sensitize the population of the project area to the need for conservation, and elicit both male and female villager participation, the project set up the Local Resource Conservation Fund to support the local resource needs. The fund is intended to: provide credit to participating farmers; encourage cooperative action in conservation programs; provide program administrators a means to fill gaps in financial assistance available to program participation; accelerate acquisition of requisite materials; assist farmers in converting degraded lands to environmentally sound uses; and to launch local research and demonstration programs. It was expected that the fund would supplement existing and on-going GON programs on a 50:50 basis. Loans funds repaid by participants are to go to a revolving fund to carry out further activities of this sort. A total of \$ 529,000 was to be transferred to the agriculture Development Bank and to the Sajha Sansthan.

2. HMG/SECID Program

According to Project Extension Paper of Jan. 30, 1985, provision was made for contribution to establish credit institutions such as the Agriculture Development Bank and the cooperatives programs. The total AID input for these programs was budgeted at US \$ 529,000 with GON contributions budgeted at US \$ 135,000 for farmer credit.

3. Evaluation Assessment

This fund was never used.

EXTENSION

1. Evaluation Setting

Extension programs in RCUP are essentially designed to help the sectoral programs work effectively. There are some programs which are common to all the four sectors and are conducted jointly in workshop, seminar, exhibitions, leader farmers training, field tours etc. A separate budget has not been allotted in this program.

A statement in the SECID briefing report about the extension program is:

" It should be realized by the evaluation team that before 1980, there was no such project, like RCUP, operating in the three districts and the DSCWM's offices in these areas were established only after the RCUP came into being. Therefore, whatever degree of success in generating awareness amongst the villagers and in changing their attitude has been achieved, it should have been achieved in the last five years and can be attributed to the RCUP programs".

2. HMG/SECID Program

The Extension Division established in the SECID/RCUP central office consists of the following staff; Expatriate Extension Specialists, DSCWM's Extension Officer and a SECID hired Local Extension Specialist. However, DSCWM's Extension Officer, after about seven months left for long term training in U.S.A. Also, the Expatriate Extension Specialist completed his assignment with SECID and left for U.S. in Aug. 1984 leaving only one person in the Central Office to handle the programs. There is only one extension officer left in the field (at Myagdi).

The expatriate position for extension programs has been abolished and as the position of DSCWM's Extension Officer has been vacant for the last 1 1/2 years.

Prior to the initiation of the RCUP's extension programs, only DOA and DLDAH has considered extension programs and included them in their regular programs. In last 2 years, DOF and DSCWM have developed a system of including extension programs in their regular programs.

Much feedback is received from the field staff and local residents. Accordingly some changes are made in the programs and some new programs are added.

This section is based on the five main objectives of RCUP's Integrated Extension Programs which are as follows:

- (a) Upgrading extension performance in DSCWM.
- (b) Fostering integration
- (c) Strengthening substantive programs.
- (d) Enhancing the ability of local people to plan and implement their own programs.
- (e) Audio-visual support to extension.

3. Evaluation Assessment

a. Target and Achievements

The C.C.C. in Gorkha has fixed one day district level workshop seminar for Pradhan Pancha of the RCUP supported area. Similarly at the sub-center level, 3 work shops in Gorkha and 4 workshops in Myagdi district have been organized.

Four Pradhan Panchas of Gorkha and Myagdi districts have visited Tinau Watershed Project and Phewa Tal Watershed Management.

Three conservation related publications in Nepali language are printed and distributed among the school children and villagers.

Training for forest guards of Gorkha, Myagdi and Mustang district has taken place for 90 days.

100 seedlings are distributed for the first time in Gorkha and Mustang district to individual farmers.

20 Agricultural Assistants from Gorkha and Myagdi district are trained for one month.

Two month training is given for WDOS and two week training for WTC in Jawalakhel. Similarly kitchen garden training also is imparted for women.

A total of 198 farmers are given training on improved farming. The audio-visual equipment have been widely used in two catchment areas by all the RCUP supported line agencies.

b. Relevance

The integrated extension program is highly relevant in this project. With the extension activities in the field, the villagers get knowledge about resource conservation.

c. Cost Effectiveness

The cost benefit data is not available in the SECID briefing book. But the extension program seems quite cost effective as seen during field visits to some of the RCUP area.

d. Technical Soundness

The main techniques used so far are training and workshops. These appear to be well designed.

e. Integration With Other Components

Extension is working well among the project components.

f. Institution Building

The extension program has changed quite a bit during the RCU project period. Moreover it is started quite late. It has started a good direction in building local institutions.

g. People's Participation

It appears people are taking interest in Agriculture, pasture management and to some extent in soil and water conservation.

h. Potential Impact

The work to date in extension has the potential to have a very significant impact in the project area.

4. Summary

There is no quantitative data to evaluate the degree of conservation awareness. The impression of the evaluation team gained during the field inspection is that there is a general awareness of conservation at the district panchayat level. At the local panchayat level there is awareness in those areas where RCUP has project activity. Based on the requests for assistance from individual farmers, there is at least a beginning awareness at the farmer level.

RESEARCH

1. Evaluation Setting

At project start up no data was available for scientific forest management, in RCUP areas. In addition, only meager information was available on the growth behavior of the suitable species for plantation in these districts. This resulted in RCUP involvement in these areas and funds were made available to the Forest Survey and Research Office (FSRO) in the Department of Forest. The funding enabled FSRO to perform functions such as, forest inventory, preparation of management plans for the national forest, and species trials.

The RCUP Project Paper and overall Management Implementation Plan included research activity within the Forestry Management component. The Project Paper refers to this program as establishment of an agro-forest research base, four field research centers, and 260 research trial plots.

The 1983 Special Evaluation Team did not mention this research. The Project Extension Paper has deleted this program, and suggested it be phased over an to other projects.

2. HMG/SECID Program

The total expenditure incurred by the FSRO from 1980-81 to 1984-85 HMG fiscal years comes to \$ 198,000 out of the budget of \$ 280,000. HMG/N shared \$ 90,000 according to the SECID Briefing Book, dated August 1985. The USAID contribution amounted to approximately \$ 100,000.

The budget covered the following program by FSRO in the RCUP area:

- a). Research Trial Plots.
- b). National Forest Inventory and Forest Management Plan in all three districts.

As per the implementation plan, 195 research trial plots (out of the 260 mentioned in Project Paper) were to be established in the field. But only 13 different trials in 11 location have been established against the target of 195. In addition, the Project Paper also envisaged agro-forestry research and four field research centers which never came into existence.

Management plans have recently been completed for 58,963 hectares of National Forest as was targeted. There is some question as to how well the plans can be implemented as they may be too theoretical to be practical.

Apart from forest research the RCUP supports the research program of some other line agencies such as varietal trial and pre-production verification trials in agriculture, and joint plantation trials between Forestry and Livestock Departments.

3 Evaluation Assessment

a. Targets & Achievements

Original target were set too high, therefore FSRO trial plots establishment were drastically scaled back to the 13. (See Table A-1)

b. Relevance:

The research function is quite relevant to the RCUP program. Research is important to determine suitable species for plantation. The results, if favorable, can be disseminated to all comparable areas. A successful plantation has a good demonstration effect and will motivate people to plant more trees, even on their land.

c. Cost Effectiveness:

The \$ 100,000 spent for the 13 trials and the forest management plan development appears to be a reasonable investment.

d. Technical Soundness:

All the 13 species trials have been well designed. Site selection has been done in different altitudes and aspects. Both local and exotic species have been tried. FSRO is taking all the necessary measurements in timely fashion under the leadership of a U.S trained forestry professional. It is preferable that 13 trials be conducted in a technically sound manner, than many more in a haphazard manner.

Already good results on the trial plots have started coming in. Eucalyptus camaldulensis has grown to the average height of 4.24 meters in 29 months in Banduk (Myagdi) trial plot. This is a promising beginning.

The one trial plot observed was well protected, but all was covered with grasses. This does not seem to be a good practice.

e. Integration

There is no integration of the forest research program with other Departments except that Forest Research has included fodder trees in the trials. This was given to FSRO who is handling all the forestry research of the country with the assistance of the ODA Silviculture Trial Unit.

All the research functions in the 3 districts under the RCUP program are controlled by the central office of FSRO. In the Project Paper there is a provision for four field research centers which would be a great help in developing the research program. A corps of advanced trained manpower has to be developed for successful operation of the research programs.

4. Summary

Forest research program is functioning reasonably well under FSRO, but would benefit from establishment of field research centers. The amount spent for the 13 trials appears to be reasonable investment. Preliminary results are already coming in.

TRAINING

1. In-Service Training

a. Evaluation Setting

In-Service training in RCUP involves the Ministry of Forest and Soil Conservation Training Wing. This Training Wing was chosen to provide in-service training to new employees (orientation) and updating of existing employees.

2. The HMG/SECID Program

The main objective of this sector of activities is to increase the capacity of the Nepalese people to provide the technical and administrative skills required to carry out resource conservation management.

The objectives of the in-service training system are:

- a). Inculcate all personnel in methods of forging a partnership with the people to be served.
- b). Equip all present and incoming staff with the direction and motivation to design and implement programs.
- c). Provide communication and coordination within the ministry and other agencies to minimize confusion and overlap.
- d). Encourage professional behavior on the part of all employees.
- e). Impart new technology to all employees.

Table 1

<u>TRAINING TARGETS</u>								
Offered by	Target Group	Enrollment	Complete course	Course times offered	Sessions	Weeks	Man weeks of training	
MFTW	Reorientation DFC & Senior Officer Ranger, JT's, Sc overseers	60	1	3	3	2	120	
	Conti- nuing Trainers	40 180 200	1 3 2	2 3 9	2 3 18	3 2 3	120 360 600	
	Total	580	7	-	26	-	1,200	
	Both MFTW Cen- tre & Trainers	Community Forestry Assis- tants	360	2	6	12	6	2,160
		Catchment construc- tion officers	40	5	1	5	6	240
Certifi- cate Techni- cians		100	1	22	22	2	200	
S & WC Assis- tants		80	1	5	5	6	480	
Total		860	9	-	44	-	3,080	
Trainers	Pancha- yat Forest Foreman	860	1	51	51	6	5,160	
	Panchayat Forest Watcher & Forest Guard	1,000	1	51	51	6	6,000	
	Nursery men	320	1	51	51	6	1,920	
	Total	2,180	3	-	153	-	13,080	

Table 1

1980/85 TARGET ACHIEVEMENT OF MINISTRY OF FOREST AND SOIL
CONSERVATION TRAINING WING
TRAINING PROGRESSIVE REPORT - F.Y. 78/79 TO 84/85

Year	TRAINING DESCRIPTION	TIME		NO OF PARTICIPANTS		TOTAL
		FROM	TO	Male	Female	
1980/81	1. Community Forestry Assistant In-service Training I	29 Mar.81	21 Apr.81	33	-	33
	2. Community Forestry Assistant Training (Entry)	30 Dec.81	8 Jan.81	26	-	26
	3. Soil Conservation Assistant	24 May 81	14 June81	20	-	20
	4. Orientation Training	6 May 81	22 May 81	15	-	15
						94
1981/82	1. Community Forestry Assistant In-service Training	9 Aug.81	2 Sept.81	28	-	28
	2. Community Forestry Assistant Training (Entry)	28 Mar.82	1 May 82	18	-	18
	3. Forest & Wildlife Conservation Workshop	18 Oct.81	25 Oct.81	35	-	35
	4. Junior Forest Officer's Follow up Workshop	8 Jan.82	21 Jan.82	11	-	11
	5. Warden's Workshop	27 Jan 82	2 Feb.82	14	-	14
	6. Junior Forest Officers' Orientation Training	22 Apr.82	7 May 82	10	-	10
	7. Forestry for Women Extension	31 May 82	13 June82	-	14	14
						130

TRAINING PROGRESSIVE REPORT - F.Y. 78/79 TO 84/85 (continued)

Year	TRAINING DESCRIPTION	TIME		NO OF PARTICIPANTS		TOTAL
		FROM	TO	Male	Female	
1982/83	1. Community Forestry Assistant In-service Training	29 Aug.82	18 Sept82	18	-	18
	2. Panchayat Protected and Panchayat Forest Planning	12 Sept82	2 Oct.82	31	-	31
	3. -do-	26 Sept82	16 Oct.82	40	-	40
	4. Forest Management Course for D.F.O.	21 Nov.82	20 Dec.82	22		
	5. Trainer's Workshop (For Forest Guard Course)	30 Jan.83	4 Feb.83	8		
	6. Village Extension Practice	1 Feb.83	17 Feb.83	15	-	15
	7. Warden's Workshop	7 Mar.83	17 Mar.83	19	-	19
	8. Junior Officer's Orientation	15 May 83	3 June83	10	-	10
	9. Forestry for Women Extension Workers	25 June83	10 July83	-	24	24
	10. Computer Programming workshop (for Senior Executives)	23 June83	24 June83	14	-	14

						201
1983/84	1. Panchayat Protected & Panchayat Forest Planning	7 Aug.83	29 Aug.83	22	-	22
	2. Community Forestry Assistant Orientation Training	7 Aug.83	2 Sept83	13	-	13
	3. -do-	28 Aug 83	17 Sept83	21	-	21
	4. -do-	-do-	-do-	19	-	19
	5. Nursery Naik Training	4 Sept 83	9 Sept 83	8	-	8

TRAINING PROGRESSIVE REPORT - F.Y. 78/79 TO 84/85 (continued)

Year	TRAINING DESCRIPTION	TIME		NO OF PARTICIPANTS		TOTAL
		FROM	TO	Male	Female	
	6. Panchayat Protected & Panchayat Forest Planning III	18 Sept 83	2 Oct 83	13	-	13
	7. Junior Officers Follow-up Workshop	26 Oct 83	Nov 83	7	-	7
	8. Training Trainers Course	9 Nov. 83	30 Dec. 83	13	-	13
	9. Forest Resource Management Course for D.F.O.s	14 Nov. 83	16 Dec. 83	17	-	17
	10. Panchayat Forest and Protected Forest	20 Nov. 83	11 Dec. 83	12	-	12
	11. Community Forestry Study Tour to Gujarat	19 Jan. 84	7 Feb. 84	32	-	32
	12. Junior Officers' Orientation	6 May 84	26 May 84	9	1	10
	13. Village Women Extension Workers	21 June 84	4 July 84	-	20	20
<hr/>						
1984/85	1. Panchayat Forest & Panchayat Protected Forest Management Course	28 Aug. 84	17 Sept 84	21	-	21
	1A. Wardens Workshop	18 Sept 84	24 Sept 84	25	-	25
	2. Forest Guards (Trainers Training)	19 Sept 84	24 Sept 84	22	-	22
	3. 4th Warden	14 Oct 84	23 Oct. 84	25	-	25

TRAINING PROGRESSIVE REPORT - F.Y. 78/79 TO 84/85 (continued)

Year	TRAINING DESCRIPTION	TIME			NO OF PARTICIPANTS		TOTAL
		FROM	TO	Male	Female		
	4. Community Forestry Assistant OR Rangers Orientation Course						
	5. Junior Officers Follow-up Wksp	4 Nov 84	11 Nov 84	8	-	8	
	6. Panchayat Forest & Panchayat Protected Forest Management	25 Dec. 84	17 Jan. 85	11	-	11	
	7. Trainers Training for Forest Guards Training	25 Dec. 84	31 Dec. 84	8	-	8	
	8. Assistant Rangers/CFA Orientation Training	7 Feb. 85	2 Mar. 85	15	-	15	
	9. Forestry Orientation Course for JTs'	19 Feb. 85	5 Mar. 85	8	-	8	
	10. Junior Forest Officers' Follow-up Workshop	16 Apr. 85	24 Apr. 85	7	-	7	
	11. Junior Forest Officers' Orientation Course	16 May 85	7 June 85	20	-	20	
	12. Women Extension Workers	17 June 85	7 July 85	-	20	20	
						182	
						314	
						GRAND TOTAL	314

3. Evaluative Assessment

a. Target Achievement

According to target, a total of 1,060 different persons were to get in-service training during 5 years i.e. between the FY 80- 85, but only 814 persons got trained. Many PF Foremen, PF Watchers, Forest Guards and Nursery men have been trained by the trainer (who were trained by the Training Wing) but the achievement data for this are not available (See Table 1 & 2).

b. Relevance:

The above mentioned objectives are appropriate to program objectives. Without trained staff, the plan and programs of HMG/N will be very difficult to implement in the field. With the introduction of decentralized programs in most of the development activities of HMG/N, the first entrants in Govt. Service will be really in trouble as they will not have any curriculum which will enlist them in their academic carrier. Here in MSCFTW, they can have all the relevant training.

c. Cost Effectiveness:

Data not available.

d. Technical Soundness:

The Team has no adequate basis to judge technical soundness. No course evaluation has been done that the team were aware of.

e. Integration With Other Component:

MFSCTW is preparing the required type of training for fresh forest graduates and rangers, and training in the development of management plans of PF/PPF for the rangers. So there is cordial cooperation with Dept. of Forest, Dept, of Soil and Water Conservation, Dept. of National Park and Wildlife Conservation, with District Panchayat and other forest based industries. But there is no integration with other line agencies.

4. Summary

The MFSCTW effort has not met the targets set. The lack of formal course evaluations makes evaluation difficult.

INVENTORY & MONITORING

1. Evaluation Setting

The importance of an inventory and monitoring system is stated in the Project Paper in the following manner:

"In order to plan wisely for the future allocation of land and to efficiently utilize it to its maximum capability, it is necessary to conduct resource inventories and build an on-going monitoring mechanism that evaluates how applied techniques are adapting to local conditions."

The Project Extension Paper goes on to say,

"The development of a strengthened and expanded system of monitoring and evaluation will form a key element of project implementation during the extension period."

This was to be the responsibility of the project's Monitoring and Evaluation Unit which would monitor institutional effectiveness and development, reforestation and forest management, pasture management, soil conservation works, and local participation.

2. The HMG/SECID Program

While the financial monitoring for RCUP has been exemplary, the field evaluation and monitoring unit, which has been repeatedly called for in project documents and by USAID, has not been established in SECID/RCUP. It does not appear that this deficiency will be corrected since the shortage of project funds, has resulted in cutting out the provision for a Field Activities Monitor in the current budget. It is suggested that the SECID Nepali Professional staff make a major effort between now and July, 1986 (end of SECID contract) in improving the qualitative data collected from the programs and in analyzing that data.

The Smith/Korns report said much of the necessary field data was being collected. Actually very little of a reliable nature has been done. Monitoring and evaluation is not specifically addressed in the RCUP Evaluation Briefing Booklet or the 1985 Benefit/Cost Studies prepared by SECID. While the methodology of the Benefit/Cost Studies is valuable, the lack of good reporting and monitoring has resulted in a study which is based on unreliable data in its analysis of RCUP's actual impact.

Through the urging of USAID, land use/vegetative cover impact monitoring using aerial photography has been conducted by the National Remote Sensing Centre (NRSC) for 7 panchayats in the Daraundi Catchment. This was done using aerial photos dated 1978 and 1984, and preliminary vegetative cover change maps were produced. Preliminary mapping is yet to be done for the RCUP areas in the Mustang and Myagdi Districts. Ground truthing remains to be done for the 7 panchayats which have been mapped.

The soil survey of the Daraundi watershed done by Peace Corps volunteers and the geomorphic mapping for both watersheds are significant contributions to the inventory efforts. Hydrological and land capability surveys derived from the soil survey have also been prepared. It is expected that a soil survey of the Upper Kali Gandaki watershed will be completed eventually.

The most accurate and complete monitoring and evaluation has been for building construction. This is due to the tangible physical nature of the construction and the presence of dedicated SECID engineers in the field.

3. Evaluative Assessment

a. Targets and Achievements (see table A-1)

The table shows good progress toward targets. Except for "Documentation (plot points)", none of the target/achievements address monitoring of project activities and progress, but are all in the area of inventory.

Monitoring of target achievements from DSCWM, DOF, DLDAH, DOA would be difficult at present given the diffuse nature of their activities and inadequacies in reporting procedures. For example target fulfillment data for plantation establishment has been supplied by line agency field staff, but is difficult to spot-check since data is combined from scattered sites and can not be readily broken out to identify parcels planted, species planted, or person responsible.

b. Relevance

Inventory and monitoring of the natural resource conditions as well as human needs and actions on a watershed are highly relevant to achieving good integrated management. (see subsection a).

c. Cost Effectiveness

A good beginning has been made on establishing the ground photo points called for in the Implementation Plan. Points have been set up and initial photos taken for 30-50% of the project. Approximately 10% of the points have been rephotographed to record the progress made. The use of ground photo plots is one of the easiest, most graphic, and cost effective means by which project impact may be documented. This effort should be continued and expanded, even if a Field Activities Monitor is not assigned to RCUP.

Relatively simple and inexpensive instruction to field personnel in improved techniques of measuring and reporting field activities could greatly boost the useability and reliability of primary data.

d. Technical Soundness

There is considerable question as to the accuracy of field measurements and reporting, especially in applying slope correction factors when measuring land areas, calculating/reporting numbers of trees planted, and in tree survival counts. Not correcting for slope on the steep plantation sites produces greatly exaggerated area measurements, thus inflating reforestation achievements. The Regional Director of Forests is taking steps to improve reporting procedures which will facilitate the spot checking of field reports.

e. Integration with Other Project Components

In theory, inventory and monitoring should play a major role in integrating the components in natural resource/watershed management. Inventories should provide basic resource data to determine how activities can best be integrated for maximum impact. Monitoring should provide a record of project progress and problems so that lessons can be learned and activities may be adjusted for better integration and overall impact. Some good inventory work has been done which has helped in planning and integration, but the monitoring has been sorely lacking.

f. Institution Building

The continuing absence of a Field Activities Monitor for RCUP or anyone specifically responsible for inventory and monitoring, has meant that there has been no concerted effort by RCUP to develop improved measurement and reporting practices for the line agencies.

g. Peoples' Participation

The Guan Sallah approach was employed in the preparation of several panchayat resource development plans. A major component of this approach was the Panchayat Characteristic Survey which was based on the opinions of the Panchayat Conservation Committees and the Soil Conservation Assistants. Despite the effort devoted to the social surveys, the results were not well incorporated into the line agency programs.

h. Potential Impact

Vegetative impact change monitoring by the NRSC holds significant potential for general impact assessment in the RCU Project areas. As yet it is too early to monitor RCUP impact, but existing photography will provide a good basis for comparison if photography is flown in the future at 5 to 10 year intervals. It is estimated that RCUP personnel working in cooperation with NRSC, could map the vegetative impact changes on the entire RCU Project area for \$10,000 - \$15,000 worth of plane time and photographic supplies per inventory.

4. Summary

Although a good system of fiscal monitoring has been established, and a significant start has been made in gathering inventory data, physical accomplishments are reported only as achievement against work plan targets. The monitoring system, repeatedly insisted on by USAID, has not yet been implemented in the field. It is suggested that the monitoring system employed by the Community Forestry Development project be adopted for RCUP.

WOMEN IN DEVELOPMENT

1. Evaluation Setting:

Women, who form 49% of the Nepalese population are predominantly engaged in agriculture. Despite the established fact that enhancing women's potential in contributing to various development program is of utmost importance for the achievement of rapid economic development, Nepalese women historically have not been involved in development activities.

The women in farm families in the hills play a major role in agriculture. Among other duties, they are usually the fuelwood and fodder collectors, heavily involved in animal husbandry activities, in addition to 66% of the time spent in fuelwood collection, and water collection. Therefore, they are of special importance to the success of any conservation and production program.

Neither the Project Paper nor the Project Implementation Plan included Women in Development as a separate component. The component was added during the course of the project. The Mid-Project Evaluation Report recommend additional attention be given to this dimension (Recommendation # 9).

2 . The HMG/SECID Program:

The general concerns of the RCUP project as related to woman in development are two fold: i) to increase the success of project implementation by bringing women into project activities and ii) to make the rural women more self-reliant.

The general feeling is that Nepal's renewable natural resources are being destroyed extensively and rapidly and the fact that women, who are responsible for directly using the renewable natural resources, can play a vital role in their conservation and utilization. The RCUP has supported the Institute of Forestry to recruit and finance female candidates since 1983.

The Institute of Forestry/Institute of Renewable Natural Resources, presently located in Hetauda , offers training to young men and women in the fields of Forestry, Soil and Water Conservation, and Wildlife Management.

All students of the Pokhara campus in good standing who are not receiving any other financial support will receive a stipend or or scholarship provided by funds from the USAID/RCUP. Students at the certificate level will receive Rs. 2,000.00 per academic year while the B.Sc students will generally receive Rs. 4,000.00 cover living expenses. All female students at IOF/IRNR receive the above stipend plus

an allowances for suitable clothing for field work. Work study grants also available to female students which provide an additional NRs. 100 per month.

IOF/IRNR admitted its first female students in 1983 when six young women began their first year of certificate level studies and one began her first year of study for a B.Sc in Forestry. The provision of a minimum of 10% to be seats reserved for female was fulfilled. At present there are 19 female students.

The Resource Conservation and Utilization Project is putting its emphasis not only on the development of women at the Institute but also their participation at the grass roots level. Similarly, woman's participation is encouraged in the field in various income generating activities, such as Lokta bark collection, kitchen gardening, user group committees, cook stove evaluation ect.

The objectives of the women's development program are briefly as follows:-

- (a) Help MPLD/WDS recruit three women Development Officers, one for each of the three Districts supported by RCUP.
- (b) Help train these Women Development Officers, Women Workers and other field level women workers.
- (c) Help/WDS organize in-service training for women field staff.

Job descriptions for Women Development Officer in RCUP Area are as follows:-

- i) Become familiar with the area, aims and the objectives of the project.
- ii) Establish good working relations with LDO, with other RCUP line agencies, Nepal Women Organization and other Village women.
- iii) Spend majority of the time in the field.
- iv) Identify, 2-3 panchayats in which she will focus her initial work.
- v) Identify and list income-generating activities stated by the villagers on a priority basis and identify those that also support the objectives of RCUP.
- vi) Maintain contact at the central level with RCUP Project Coordinator; Chief of WDS, MPLD; and Social scientist SECID.

- vii) Coordinate Women's Development issues with other line agencies at the district.
- viii) Maintain direct contact and supervise the Women works.
- ix) Keep record of training needs for village level trained/untrained women of various skill development activities.
- x) WDOS should actively engage themselves in making women conscious of basic social issues.

Involvement of Women in RCUP

The project has very little practical experience of people's participation. In working out involvement of women, they have little over a year's experience of seeking women's involvement in the RCUP programs and activities. The program activities which have involved women directly or indirectly are as follows:

- (a) The District committee President of the Nepal Women Organization is a member of the catchment conservation committee.
- (b) In Panchayat conservation committee also, there are some women members.
- (c) User group committees have been formed. for drinking water and irrigation schemes.
- (d) Three Women Development Officers have been recruited and provided two month long training. They are posted in Gorkha, Myagdi and Mustang.
- (e) Recently, 9 Women Workers - 3 in each districts participated in a two week long training organized jointly by RCUP, MPLD and WDS.
- (f) The WDS after having selected a site - initiated, organized and conducted workshops and literacy classes for women in the panchayat. These activities will be continued in the future program too.
- (g) Over 15 women Agriculture Assistants are currently working in RCUP supported area.
- (h) Last year, 12 women farmers were trained in Daphne Forest Management in Myagdi. These trained women get permits from the Dept. of Forest to harvest lokta plants to sell to Nepali paper making groups in Parbat District. There is provision for 150 more women farmers to be trained in lokta management.

- (i) There are currently two women nursery naikes working in Myagdi and Mustang district.
- (j) The Ministry of Forest and Soil Conservation Training Wing in collaboration with RCUP, offered three weeks basic training/courses on forestry and soil conservation for the following women:

Women Participants

Women Workers	14
Women Workers	24
Women Development Office	22
Women Workers	18

- (k) Another activity in which village women are directly involved is the improved stoves programs. Around 1100 improved stoves have been successfully installed in the project areas and are in use.
- (l) In addition to the above, a considerable number of women work on daily wage basis in RCUP supported program activities such as forest and horticulture nursery works, tree planting, transporting tree seedling to the planting sites and soil conservation works.

For women's activities HMG/N and RCUP have allotted about \$ 27,000. Only about \$ 17,000 have spent during one year period i.e. 1984/85.

3. Evaluation Assessment

This is a relatively new component. The first Women Development Officers were appointed this year. The team observed women's participation in Catchment Conservation Committee meetings at Gorkha. Also a village was visited in Gorkha District where the Women Development Officer was instrumental in getting villagers involved in a drinking water development under RCUP. Based on these limited observations, the evaluation team believes the WDO can be a powerful force to help achieve project objectives. Thus, although too early to evaluate, RCUP has made a very large effort as outlined under the program description to increase involvement of women.

ENERGY ALTERNATIVES

1. Evaluation Setting

Nepal is facing a critical energy situation. Firewood, animal dung, and agricultural wastes supply over 90% of the total energy consumed. This is leading to depletion of forests, declining soil fertility, and consequently soil erosion.

In order to reduce the adverse effects of energy demand on the natural resources and increase the standard of living, an energy component was included in RCUP. The goal was to provide sufficient energy for home and small commercial use. This was to be accomplished by developing energy from alternate sources, and improving efficiency of energy use. Specific objectives were listed as follows:

- Provide fuelwood and fodder close to homes
- Improve efficiency of fuelwood use
- Improve transportation facilities
- Introduce alternative energy sources and technologies

The alternate energy technologies to be introduced were micro-hydro plants, bio-gas plants, improved chulos (stoves), solar crop dryers, solar hot water heaters, solar kilns, haybox cookers, and windmills. These were to be a combination of experimental and operational installations. Wooden bridges, a multi-purpose water impoundment, hydraulic ram pumps, ropeways, beehives, peddle threshers, and toilets were also to be included in the energy component.

2. The HMG/SECID Program

The prime emphasis of the energy program has been on improved chulos, bio-gas plants, multi-purpose water mills, solar hot water heaters, solar crop dryers, paddy threshers, corn shellers and three mini-hydro plant feasibility studies.

A few wooden bridges were constructed, a windmill was briefly tried, and one Energy Exhibition was given.

3. Evaluation Assessment

a. Targets and Achievements (see Table A-1)

Distribution of improved stoves has exceeded original targets by more than 300% in the RCUP area, even though distribution in Mustang district fell slightly below target.

Solar water heaters have achieved slightly less than half the targeted installations and the number of completions is declining.

Solar crop driers completions exceeded targets by 130% but the rate of completions is slackening.

The target for bio-gas plants was set at 10, but only one was installed.

Installation of multi-purpose water mills also fell below target with 2 out of the planned 5 constructed.

b. Relevance

While it is important to reduce demands for energy from fuelwood, dung, and agricultural residues, the alternative energy component impacts indirectly on the resource management problem. Thus it is not highly relevant to the central concept of watershed management.

c. Cost Effectiveness

The micro-hydro feasibility studies consumed roughly 80% of the alternative energy funds (SECID Benefit/Cost Study), and can not be judged cost effective at this juncture.

Despite the overall cost effectiveness, the chulo improvement program has encountered problems in developing a cost effective design for the Mustang District.

Conversely the solar crop dryer has not been adopted as a cost effective technology in Myagdi and Gorkha, but has found considerable acceptance in the Mustang district for fruit drying.

The cost effectiveness for RCUP to install improved water mills is marginal, but they have had a substantial demonstration effect to the private sector. It is now suggested that the private take over the distribution of improved water mills financed by loans from the ADB.

Bio-gas plants have not been cost effective.

d. Technical Soundness

The improved chulo program in addition to decreasing fuelwood consumption, has led to healthier, smoke free environments within homes, but there are significant cracking and maintenance problems which need to be addressed.

Efforts to develop bio-gas plants both within RCUP and by other projects have encountered many difficulties in the close supervision required for operation and in maintenance.

Solar hot water heaters have encountered some maintenance problems.

e. Integration with Other Project Components

In general there has been no real emphasis on integration of the energy component with watershed management/soil conservation activities.

The improved chulo program has been integrated with the women's development program.

f. Potential Impact

While it was a logical assumption that increased availability of alternative energy would reduce demands on fuelwood, only the improved chulo effort has immediate potential for direct impact on the reduction of traditional fuel use.

Some private enterprise spin-off of the introduced technologies has occurred.

g. Institution Building

The introduction and demonstration of water turbines has resulted in similar turbines being installed by private entrepreneurs.

Some efforts have been made to manufacture chulos locally. This appears to have potential for reducing the cost of chulos in more remote areas and could lead to independent chulo production.

h. People's Participation

Meetings were conducted with local people to determine their energy needs.

People supplied some of the transport and installation labor for the improved chulo program.

4. Summary

Improved stoves are the main success of the RCUP energy efforts.

Too many activities were attempted.

The mini-hydro feasibility studies consumed 80% of the energy budget.

While alternate energy sources are needed in Nepal, this component could have been handled better as a separate project.

IRRIGATION SYSTEMS

1. Evaluation Setting

While irrigation was not separately addressed in the Project Design Summary/Logical Framework, it was clearly considered a project component, an input contributing to "increased agricultural production" (Project Goal), "protection and restoration of the soil, water, and plant resource bases" (Project Purpose), "yield/hectare of farmland increased by 15%". (Magnitude of Outputs)

Both the Action Memorandum to the Administrator and the Project Authorization treated construction of irrigation systems as a separate project component, for legislative purposes. The Implementation Plan had numerous and early references to field examination of possible irrigation sites, integrating planning with irrigation system work and so forth.

The P.P. stated (p.21) "In order to complement the agricultural component of the project it is intended that early attention will be directed to upgrading existing irrigation systems in the region as well as undertaking the building of new irrigation projects. It is recognised that a successful irrigation program will substantially reduce pressure to cultivate steep slopes, prevent further soil erosion and assist in efforts to bring additional land under productive cultivation."

"A total of nineteen new projects and nineteen rehabilitation projects have been identified in Kulekahani, Gorkhani, and Mustang/Myagdi", (Kulekhani was deleted from the project area in the revised P.P.).

In taking into account social impact considerations, the project designers recognized that investment in irrigation schemes might be at variance with other project activities in terms of benefitting the rural poor. Probable beneficiaries of an irrigation system would include those who might be described as relatively wealthy. Given the region's income profile and potential benefits generated, the activity was included in RCUP. The Financial Projections portion of the PP contained a breakout of irrigation costs. AID funds were to finance local consultants, commodities, project allowances, and 'other costs', amounting to US\$ 1,083,400. HMG/N was to contribute professional and support staff, commodities and 'other costs' amounting to US\$ 93,700. A 12% inflation factor and a 10% contingency factor was to be available with respect to both AID and HMG/N contributions. Thus the total irrigation sub-component projected costs amounted to US\$ 1,177,100, plus 22% or an order-of-magnitude of US\$ 1,400,000. The April 1983 Special Evaluation Team felt that irrigation projects, once identified, planned and approved, did not

generally require special coordination in order to be effective. (p.7) "... the Ministry of Water Resources and the Ministry of Panchayat and Local Development, are responsible for irrigation... These sectors tend to be confined in time and space, are largely managed through a contract process and not characterized by the continuous management relationship with other sectors like livestock, forest or upland agriculture development." (p.55-56)

2. HMG/SECID Program

Irrigation construction, as it has evolved, involves the participation of three HMG/N line agencies. The Department of Irrigation (DOI) is responsible for new irrigation efforts with large-scale command areas, MPLD is responsible for new small-size command area irrigation systems, and the Department of Soil Conservation and Water Management (DWCWM) is responsible for rehabilitation existing of irrigation systems. SECID was requested, and agreed, to assist HMG/N in fulfilling AID requirements for the release of construction funds, perform certain monitoring activities, and provide technical assistance, as may have been appropriate during construction.

Of the total of 20 irrigation sub-projects, the DOI had six sub-projects, MPLD nine, and DSCWM five, covering approximately 889 hectares (Gorkha 462, Mustang 334, Myagdi 93), at an estimated total Rupee/US dollar equivalent cost of US\$ 1.7 million. Most of Gorkha and Myagdi command areas involve new irrigation, while most of the effort in Mustang and is for the renovation of existing systems. Major costs were in building weirs and aqueducts, with lesser amounts for digging and lining canals, river training work, stream stabilization, pipe and other commodities. Funds were also expended for feasibility and system design.

Irrigation systems are actually agricultural development programs in the main; thus placing implementation responsibilities in the hands of the three agencies was done primarily to facilitate construction.

3. Evaluation Assessment

a. Target Achievements

Four out of six irrigation projects of more than 50 ha. command area have been completed. Where as only five out of 11 irrigation projects of less than 50 ha. command area have been completed even after the drastic revision of the original target from 22 to 11 (See Table A-1).

b. Relevance

Irrigation systems increased crop yields or plantation survival, but its relevance depends on its contribution to primary project purpose. With respect to forests, field observation of a line agency plantation in Mustang without irrigation--almost entirely barren--adjacent to a relatively new community forest plantation with irrigation, dramatically shows the potential for irrigation under such circumstances. For agriculture, increased crop yields associated with the provision of irrigation makes sense both on conservation and nutritional grounds if there are reasonable prospects of successful operation.

Irrigation is not an end unto itself, but rather an input in achieving project goals. Additional hectares put under irrigation respond to project purposes. However, if RCUP's primary purpose is to demonstrate the benefits of an integrated, resource conservation development approach, the degree of relevancy is dependent on whether project purposes are served in conjunction with primary activities. For example, utilizing irrigation to create user groups which provide a means to engage communities in other conservation activities, trial testing on irrigated fields, are both examples of heightening the relevancy of an irrigation program. In the initial phases this was not RCUP's approach--it appears to be more so now.

c. Cost Effectiveness

Irrigation systems are assessed in terms of the increased agricultural production that result from expanded irrigated land acreage, related to the cost per hectare for installing, operating and maintaining the irrigation system. Cost/benefit information provide by SECID for a case study (Dhuwakot), applied to all other RCUP irrigation activities would result in B/C ratio ranging from 454 (Kagbeni) to 2.76 (Kunjo). One problem with the B/C ratio dependability is the fact that hectare estimates from field observation are often too high. (This is because the measurement techniques are inaccurate). Given the construction and maintenance problems that have arisen with this project component, and the different cropping patterns in the different panchayats, one must take great care in relying to strongly on success projections. Nonetheless, in the RCUP region irrigation systems probably have a high probability of a positive B/C ratio. Whether the systems were adequately analysed or based on priority ranking, is another matter.

d. Technical Soundness

This project component has experienced significant difficulties starting with the feasibility, design and construction phases, and has continued through transfer to the beneficiaries. System construction was begun in some

instances without adequate determination of water supply availability (Muckowktar), or with mislocation of the water supply intake point (Tukuche). In some instances inadequate field checking of designs led to serious design and construction problems. In other instances communities have not been prepared to operate, maintain or assume the costs of their systems. The shift to a decentralized approach, with adequate technical advisory capacity at hand to assist the communities, coupled with requirements for increased local labor contributions during the construction phase, should help to shift the focus of responsibility down to the District, panchayat, and ward level.

e. Integration With Other Activities

In the preliminary phases, the RCUP process for irrigation site selection involved some coordination with other HMG/N line agencies. Once an irrigation system was approved, most coordination ceased. Those line agencies engaged in other RCUP activities did not see project investment in an irrigation system as an organizing factor for their program to adjust activities to build on potential benefits. For example, field visits did not produce much evidence to suggest that the Department of Agriculture concentrated its varietal or Pre-Production Verification Trials in conjunction with new irrigated land efforts. Further, the availability of RCUP funds for irrigation has had the affect of withdrawing other HMG budgetary support for this purpose.

f. Institutions Building

If, in the course of the project, HMG line agencies had considered irrigation systems as a program integrating event, the potential for institution building would have been substantial. Such was not the case. The formation of user groups for RCUP irrigation sub-projects offers some prospect for institutional benefits to arise in the future.

g. Potential Impact

The primary impact will be on those hectares irrigated. This assumes that the systems are properly installed and operating.

h. People's Participation

Unlike drinking water projects, the benefits generated by an irrigation system is primarily economic, not social. With a more direct and visible potential financial return, beneficiaries should probably be more likely to take care of the installed system. Based on available information, this cannot be asserted with assurance. There is general agreement, however, that there is greater likelihood of success if local participation begins at the design and

construction phase. In some cases, RCUP funding of irrigation has undermined traditional community approaches in this field. Since 1983, user groups have been formed. In cases observed, there has not been much participation in cost sharing by the local communities. However, in 1985 in Jhong Panchayat, the community shared about 40% of the costs of the irrigation of a community forest.

4. Summary

In many areas where RCUP operates, irrigation is potentially the linchpin in increasing agricultural yields and forest plantation survival. Difficulties have been encountered in the design and construction phases, as well as in gaining the cooperation of beneficiaries in servicing their system and financing operational costs. Active, early beneficiary involvement holds out the greatest prospect for long-term success.

DRINKING WATER SUPPLY

1. Evaluation Setting

Drinking water was not explicitly addressed in the Project Design Summary/Logical Framework. Its inclusion can be inferred, on various grounds, from: the Project Goal--to improve the standard of living of the rural poor; an Output--to increase livestock productivity; an Objectively Verifiable Indicator--improved family health through nutritional intake. While there were no specific implementation targets in the Logical framework for the DWS component, the PP (p.23) specifies 82 water systems are to be established, of which 12 are classified as large, and 70 small. The revised PP, which reduced the project to two catchment area reduced these numbers to 6 large, 16 small water systems. Projected expenditures over a five year period for DWS systems were contained in the revised PP. AID was to finance local consultants, commodities, project allowances, and other costs, all amounting to US\$ 633,000. HMG/N was to provide the equivalent of US\$ 64,400 for professional/support staff, commodities, and other costs. An inflation factor of 12% per year and a contingency factor of 10% per year increased potential AID and HMG/N resource availability by 22% per year. The total amount thus projected as available for the DWS component was US\$ 697,400 plus 22% per years or an order-of-magnitude of over US\$ 850,000.

The PP narrative clearly articulates the project designer's reasons for including DWS, and how it was to function. "A large part of the population is deprived of piped facilities and rely on local seepage wells, streams, irrigation channels, and springs. The importance of piped water supply is realized as a basic need and a necessary condition for improved rural health." (p.22) In poorly developed facilities and very low socio-economic condition of the areas call for the simplest technology and maintenance requirements...Therefore RCUP will construct pipeline to bring the best and most convenient water supply to the communities". (p.22) "Two HMG/N agencies will institute a total of 82 water supply projects. The Department of Water Supply and Sewerage under the Ministry of Water, Power, and Irrigation will implement 12 projects reaching an estimated 15,000 people. 70 smaller projects will be implemented by the Local Development Department under the Ministry of Home and Panchayat (sic) Maintenance of the systems will be the responsibility of local panchayats", (p.21). In its April 1983 report, the Special RCUP Evaluation Team decided it was premature to appraise the likely impact of the DWS intervention. They raised several issues, however, which they felt were key to DWS component success. "A challenge to RCUP is to make certain that an appropriate balance is struck between what people want, which is inclined to be short term in focus and what is in the best interest of soil

and water conservation, usually requiring a longer term focus". (p. 105) They recommended that the RCUP staff periodically reexamine DWS project targets both in quantitative and qualitative terms, noting that no such review has taken place since implementation began in 1981. They also felt there was particular need to develop a quantitative and/or qualitative linkage between project targets and strategic objectives.

The Special Evaluation Team added a new dimension to the DWS rationale by arguing that with a deteriorating environment, more of the rainfall/snow melt leaves as surface runoff, resulting in the less water in the groundwater systems.

"Consequently (such) a decline.. is to be expected, with particularly serious impact during dry seasons when alternative water supplies for humans and livestock may be scarce."

The Evaluation Team touched on the benefits to the derived from user groups working with HMG/N professionals for a community motivated purpose.

"The Panchayat Conservation Committees work with RCUP extension personnel in identifying proper sites for project activities as well as establishing priorities for additional project activities..." (p.54).

2 . The HMG/SECID Program

Two categories of DWS systems comprise the DWS program: large systems are undertaken by the Department of Drinking Water Supply and Sewerage (DWSS) and small systems are the responsibility of the Ministry of Panchayat and Local Development (MPLD). In both cases, at a minimum, the role of the two government agencies involved is to oversee the construction phase. The large/small system division of responsibility affects more than who designs and installs a given system. It determines whether a formal user group is to be organized and consequently potential follow-on benefits for other RCUP objectives. DWSS systems are not user group based, the rationale being that the number of beneficiaries makes such an effort impractical. At least with respect to MPLD projects, selection apparently was based on the interaction between the local panchayat committee, RCUP/SECID staff, and MPLD. A key determinant was the quality of the user group. Of less importance was the potential user time savings of one community to another, or qualitative linkage to other RCUP activities or strategic objectives. RCUP planned to build water systems in 44 village at a total cost of over 11,000,000 Rupees. It became apparent that these targets were unrealistic and the number reduced to 23 systems. The cost for these systems was over 11,000,000 Rupees, including design costs, but not including design and construction oversight.

3. Evaluative Assessment

a. Target Achievements

Five out of six large and 14 out of 16 small drinking water projects have been completed (See Table A-1).

b. Relevance

The relevance of this RCUP component to strategy objectives can be characterized as indirect. Certainly other components have a stronger nexus with physical change and long term impact on soil and water conservation problems. Indeed, based on a review of project materials it would appear that project designers and managers were constantly grappling to find the satisfactory rationale for an activity they intuitively felt important to RCUP. The various relevancy arguments, taken separately are not convincing; cumulatively perhaps they make sufficient case to justify DWS inclusion in RCUP, in the past.

Among them are:

- DWS is a means to gain the cooperation of villagers, first in meeting their priority needs and then building on user-group cooperation to address other higher priority conservation interventions. At this juncture, however, there is no indication that user groups formed for DWS purposes have moved beyond the system, nor any explicit plans by HMG/N to do so.
- DWS systems save time on a daily basis for villagers/farmers, thus freeing them for more productive and potentially conservation benefiting purposes, while fundamentally improving the standard of living of its recipients, the rural poor. Undeniably there is merit to this argument, at least for the limited number of beneficiaries. RCUP was not designed to achieve this type of social development objective, nor would there be sufficient resources to either have substantial impact, or respond to all resources to either have substantial impact, or respond to all potential claimants. Also, project energies diverted to DWS issues are not available for the primary developmental purposes e.g. soil, water and plant conservation.
- DWS systems serve to improve the quality of water available and consumed by users, and thus represents a substantial health benefit to the rural poor. In the RCUP region, however, drinking water comes primarily from mountain runoff and is already contaminated at the point of intake. Nor is there any purification component in RCUP DWS systems. There is some improvement in water quality as a result of this effort, however water quality is only one of several related health factors including nutrition and sanitation must be improved before any major health impact can be achieved.
- DWS are a natural way to show the relationship between watershed management and drinking water supply.

- By providing accessibility to drinking water there is increased likelihood villagers will stall feed their livestock, thereby directly reducing the rate of vegetative degradation in the surrounding area. This is probably the strongest project-related rationale for DWS inclusion. Indeed, the Mission's Extension Paper proposes several DWS system modifications designed to enhance this aspect, e.g. provision for watering troughs, stock tank protection for animal incursion, drainage, and so forth. It is unclear, however, whether the Department of Livestock is either aware of this new emphasis and would be prepared to integrate these activities into its own RCUP program. Nor has there been any testing of the linkage-- are RCUP villages which now have DWS more likely to stall feed than before, or than those villages which do not?

c. Cost Effectiveness

It is difficult to judge cost effectiveness when total and true costs, including system design construction/installation, and expected operating/maintenance costs are not available. Under such circumstances, rough calculations must suffice. The June 1985 Smith-Korns study suggests that DWS project cost effectiveness could adequately be adjudged on consumer time savings. In their view, a simple formula comprised of "distance to old source (minutes), times population served, divided by cost provides best effort ranking of alternate DWS systems. The 1985 RCUP Benefit/Cost study points out that the water systems, without any inclusion of theoretical health benefits, represents a mixed picture at best. Only 11 of the 23 RCUP-funded DWS systems could be considered as qualifying using a five minute per trip saving average criterion. Of these 11, only 3 have a B/C ratio greater than 1.0, assuming a five year stream of benefits. With respect to the actual DWS systems installed, from field observation it would appear that these were as simple as possible, and consequently as cost effective as possible, when construction proceeded according to plan.

d. Technical Soundness

Installation of drinking water systems is a familiar construction technique in Nepal. In most villages the traditional system is of simple design and RCUP systems follow the basic Nepalese standard. Field visits to several sites indicate that at least in so far as the smaller community systems are concerned, they were designed and installed to suit local conditions. What has not yet been adequately formulated is the operation and maintenance of the systems, once installed. Though RCUP has apparently engaged in a village-based operator selection and training program, a limited sampling suggests that trained village operators do not understand how, what, or when to take measures to resolve operational

problems. They have no access to spare parts or quick technical advice to repair a system when it breaks down. There is a further project-created problem--when a DWS system is built with RCUP funds, from MPLD's vantage point its continued operation is an RCUP problem. Thus MPLD limited spare parts are not available to RCUP systems. Furthermore, partly because of limited spare parts, rigid adherence to DWS design which does not permit even the most basic, sensible alternation (viz. air release valves), and insufficient technical training for MPLD personnel in this field, even those who would naturally be the HMG/N professionals responsible for continuing operation/maintenance of the DWS systems, will probably have difficulty.

e. Integration With Other Components

DWS systems have been set apart from other project components. The DWSS has no linkage to other RCUP components in the field; on the other hand, MPLD is a key player in integrating community desires with national development objectives. MPLD's role in this regard was substantially enhanced after the enactment of the Decentralization Act of 1982, and is likely to expand further in the future. DWS systems are by their very nature centered in the most urbanized areas of the RCUP region, and are thus distinguishable from most other RCUP mainstream activities. Therefore, it is little wonder that other departments, such as the Department of Livestock have not expended much energy in exploring potential linkages.

f. Institution Building

The establishment of formal user group as an organizing device for further conservation/resource utilization efforts holds out the only institutional development benefit from this component. Unless there is follow-up and the user groups grow in confidence and capacity, these benefits will be minimal.

g. Potential Impact

From what we observed, we have not seen any real impact on soil and water conservation.

Even if all catchments supplying drinking water supply were protected the impacted area would be a relatively small part of the targeted area.

h. People's Participation

MPLD efforts have emphasized user groups, which are essentially people participatory organizations. Far greater involvement of the community in the construction phase, and in devising some means to finance operating costs maintain systems, is required.

4. Summary

Drinking water programs are among the most sought after activities by local communities. Experience suggests this is more a reflection of what communities want than what they consider essential or are prepared to provide continued support. Local participation at all stages, from user group formation to construction, to operation and maintenance, holds out the greatest promise for success. Further, there may be a potential to build on DWS user groups for other conservation/resource utilization purposes.

PARTICIPANT TRAINING

1. Evaluation Setting

"Participant training was included in the RCUP project for long term and short term the in U.S. and long term in India. Training was to given to IRNR teachers, personnel from eight different line agencies plus other agencies like ADB/N, MF, APRUS and DNPW. Long and short term training in a third country was included later upon the request of USAID/N and SECID. The purpose of this program as stated in the PP summary was to increase the number of trained persons in natural resource management."

The main objective of this activity as stated in P.P:

"...is to increase the capacity of the Nepalese people to provide the technical and administrative skills required to carry out resource conservation management, while continuing to serve the needs of the target population. Staff requirements, both in Kathmandu and at the project sites, will be expanded to meet program goals and to ensure that villagers are fully involved in the design, implementation and evaluation of proposed program approaches. This will occur through training of program personnel either in Nepal or out of country depending on the specialized needs of the project and access to and availability of training facilities".

2. The HMG/SECID Program

"The program was to train 49 long term participants and 99 person months of short-term training (estimated at 63 participants) in the U.S. for a total of \$ 2,101,500. Another 117 persons for long term training in India has planned with PL-480 funds. This cost is not included in this RCUP program".

"According to the Implementation plan the following person power was assigned to carry out the participant program".

- 1) RCUP part time of an expatriate to MFTW or Central staff and one administration assistant.
- 2) SECID/Chapel Hill: Full time of a professional in the office of training Programs skilled in language and graduate education placement.
- 3) Duke University: Part time Director, Center of Natural Resources and Environmental Policy's Studies (CNREPS), with support from the Dean, school of Forestry and Environmental Studies (FES) and the staff, centre for International studies.

"This program has resulted in the training of 60 long term and 65 short term trainees sent overseas".

3. Evaluation Assessment

a) Target and Achievements

Very good achievements has been made in long term training in U.S. whereas the short term training is below the target. Long term training in India is also below the target (See Table A-1).

b) Relevance

This component is highly relevant to the project purpose.

c) Cost Effectiveness

The program has increased its effectiveness by sending more participants to the Third World where there is a 3 to 1 cost advantage over training in the U.S.

d) Technical Soundness

A wide range of appropriate Institutions were chosen which was good. Many participants have come with sound technical knowledge from working in the Project and IRNR.

e) Integration

All the line agencies have been involved in the participant training program. Altogether 3 line agencies, IRNR teachers and 4 other agencies trainees have been sent abroad.

f) Institution Building

This program has helped in the manpower development of IRNR as well as line agencies.

g) Potential Impact

After the completion of the participant training program many people are working successfully in IRNR and in different line agencies. Success stories of the participants as listed by the RCUP Briefing Book are as follows:

- a) Mr.K.M. Sakya, DSCWM got excellent grades in MS resulting the award of "Mahendra Bidya Bhusan" a highest Gold Medal.

- b) Mr.M. Karki appointed Pokhara campus chief IRNR. Presented a paper in the International Range Land Component on Developing Country and Opportunities held in Australia along with E.T. Bartlett. He has designed various projects. One of the projects on forestry was funded by USAID
- c) M.A.K. Das, Asst. campus chief of IRNR invented paper production from "Ban Mara" weed and proved the utilization of solar energy for wood log protection. Prepared a paper on Forest Product Utilization for World Forestry Congress held at Mexico.
- d) Mr. S.P. Rajbhandari, DSCWM developed a research project with his advisor Dr. C.H. Shelton and conducting it at Phewa Tal, Watershed area of Pokhara.
- e) Mr. D.R. Pradhan, DLDAH, developed research project with his advisor Dr. J. Bonton in Range Mgt. and Forage Production and conducting in Mustang district.
- f) Mr. Mohan Wagley is working as Deputy/Asst. Project Coordinator, RCUP as well as Planning officer DSCWM. Many other such as Mr. M.Balla, V, Sainju and K.Kamel are working with IRNR and as well as doing research work independently.

4. Summary

"This is one of the most successful programs of RCUP, which has helped to develop the manpower needed for the country in natural resource management".

Table A-1 Targets and Achievements

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
<u>1. Watershed Management & Soil Conservation</u>				
a. Nursery Establishment	No	38	38	35
b. Panchayat Forest Plantation	Ha.	685	855	634.8
c. Terrace Improvement	Ha.	130	132	177
d. Community Water Source Protection	Ha.	200	200	147
e. Major Gully Control	No	8	8	11
f. Trail Improvement	Km.	20	30.7*	33
g. Catchment Ponds	No	27	24 *	22
h. Canal Improvement	No	-	6	4
i. Road Slope Stabilization	Km.	2	2.4*	-
j. Land Slide Stabilization	No	-	1	1
k. Stream Bank Stabilization	Km.	0.3	0.97*	0.25
l. Flood Plain Tree Planting	Ha.	170	70*	50.3
m. Snow Management - Snow Survey	No	1	-	-
n. Test drilling & Snow Fence Expt. test	No	24	-	-

* Provided by SECID

Table A-1 Target and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Imple- ment Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
<u>2. Forest Management</u>				
a. Forest Plantation	Ha.	2,130	2,130	1,203
b. Forest De- marcation	Km.	2,590	2,590	1,579
c. Establish- ment of Panchayat Protected Forest	Ha.	7,513	7,513	3,424.6
d. Seedlings Distribu- tion	No.	493,100	493,800	280,877
e. National Forest Mgt. Plan	Ha.	58,963	58,963	58,963
f. Implementa- tion of National Forest Mgt. Plan	Ha.	58,963	58,963	-
g. Preparation of Mgt. Plan for PPF	Ha.	6,013	-	1,185
h. Implementa- tion of Mgt. Plan PPF	Ha.	4,280	-	950
i. Demonstra- tion Saw mills	No	2	-	-
j. Central Nursery	No	3	3	3
k. Satellite Nursery	No	-	14	28

* Provided by SECID

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
<u>3. Range & Pasture</u>				
a. Pasture Develop.	Ha.	221	184	269
b. Improved Pasture Develop. on Terrace Risers & Burned	Ha.	89	-	-
c. Pasture Develop in Planted Plantation	Ha.	220	255*	178
d. Range Mgt.	Ha.	947	205*	172
e. National Forest Grazing Mgt.	Ha.	160	-	-
f. Panchayat Forest Pasture Develop	Ha.	300	-	-
g. Improved Pasture & Range Mgt. Studies	No	60	-	-

* Provided by SECID

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
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4. Community Livestock

a. Distribution of Improved Animals (ungulates)	Head	375	363	495
b. Poultry	Head	10,000	-	22,450
c. Fodder tree sapling Distribution	No	-	50,000	107,842
d. Forage Crop Development	Ha.	174	172	154
e. Health Kits (Equipment)	No	320	528	235
f. Castration	Head	2,070	-	3,200
g. Animal Health Parasite Control	Head	373,350	259,500*	317,873
h. Dipping Tank Installation	No	42	16	14
i. Livestock Production Studies	No	24	-	-
j. Credit Provision				
- Buffalocow	No	400	-	-
- Chaff Cutters	No	155	-	-
- Cream Separators	No	16	-	-
- Poultry Farms	No	12	-	-

* Provided by SECID

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
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5. Agronomy

a. Improved Variety & Practices	Ha.	15,525	15,525	15,918
b. Minikit Distribution	No	8,101	17,333	14,724
c. Pre-Production Verification trails	No	310	111	65
d. Varietal Trails	No	310	199	149
e. Farmer's Training	No	-	296	339
f. JT/JTA Training	No		186	196

6. Horticulture

a. Sapling Distribution	No	194,250	59,300	35,623
b. Kitchen Garden Vegetable Production	No	9,232	-	-
c. Fruit Nursery Irrigation	No	7	2	2
d. Fruit Nursery Establishment	No	2	2	2

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
<u>7. Institute of Renewable Natural Resources</u>				
a. U.S. Expatriate	No	5	-	-
b. Greenhouses	No	2	-	-
c. Field Research Station	No	2	-	-
d. Vehicles	No	-	-	-
e. Stipend for				
- Certificate	No	1,524	-	-
- Diploma	No	339	-	-
f. Training for the IRNF staff				
- Long term (U.S.)	No	16	-	-
- Long term (India)	No	10	-	-
- Short term (U.S)	No	18	-	-
g. Training Enrollment in				
- Certificate level (Av.)	No	-	220	-
- Diploma level (Av.)	No	-	40	-

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual	5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Based on HMG FY 1984/85 Program (yr. ending July 1985)	Achievements From Paul Gurung/ USAID
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8. Turn Key Construction

a. Forestry

- Forestry Project Office	No	3	-	-	-	3
- Forest Officers Quarters	No	3	-	-	-	-
- Forest Staff Quarters	No	3	-	-	-	3
- Range Office	No	5	-	-	-	5
- Rangers Quarters	No	5	-	-	-	3
- Foresters Quarters	No	20	-	-	-	12
- Guard Quarters	No	24	-	-	-	11
- Central Nursery Office & Stores	No	3	-	-	-	3
- Panchayat Nursery Office & Stores	No	35	-	-	-	-

b. Watershed Mgt.

- Watershed Office	No	3	-	-	-	3
- Quarter Type A	No	3	-	-	-	3
- Quarter Type B	No	3	-	-	-	3
- Sub-Centre Office/Qrt.	No	-	-	-	-	12

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Status Section Based on FY 1984/85 Program (yr. ending July 1985)	Achievements From Paul Gurung/ USAID
<u>c. Livestock & Pasture</u>					
- LDAH Office Building	No	3	-	-	3
- Office Quarters	No	9	-	-	9
- LDAH Office Fencing	No	3	-	-	3
- LDSC Building & Quarters	No	18	-	-	17
- Trevice at LDAH	No	-	-	-	-
- LDSC Fencing	No	18	-	-	-
- Fencing Office	No	4	-	-	1
- Store	No	4	-	-	4
- Residence for two	No	4	-	-	-
- Thatched House For Chaukidar	No	4	-	-	4
- Sheep shed	No	3	-	-	4
- Dipping tank Installation	No	42	-	-	-
- Horse Shed	No	2	-	-	-
- Sub-Centre	No	-	-	-	3
<u>d. Agronomy Extension Research</u>					
- ADO Office	No	1	-	-	1
- Quarters Type A	No	3	-	-	3
- Quarters Type B	No	4	-	-	6
- Sub-Centre Office/ Quarters Complex	No	18	-	-	10

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)	Achievements From Paul Gurung/ USAID
<u>e. Marpha Farm</u>					
- Farm Office Building	No	1	-	-	1
- Office Quarter	No	1	-	-	1
- JT/JTA Quaters	No	1	-	-	1
- Peon Quarter	No	1	-	-	-
- Threshing Floor Structure	No	1	-	-	1
- Natural Cold Room	No	-	-	-	1
<u>f. Horticulture</u>					
- Central Nursery Building	No	2	-	-	2
- Central Working Shed	No	2	-	-	2
- Satellite Nursery Building	No	5	-	-	4
- Satellite Nursery Working Shed	No	5	-	-	6
- Sub-Centre	No	-	-	-	2
- Natural Cold Room	No	-	-	-	2

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Financial Status on HMG FY 1984/85 Program (yr. ending July 1985)	Achievements From Paul Gurung/ USAID
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g. IRNR

- Fuel banker	No	-	-	-	1
- Guard House/ Gate Post	No	-	-	-	1
- Lower Public Bath	No	-	-	-	1
- Electric Sub-Station	No	-	-	-	1

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
<u>9. Fisheries</u>				
a. Fisheries Develop. Project	No	9	5	3
10. Local Resource & Conservation Fund		-	-	-
<u>11. Extension</u>				
a. Community Livestock	No	698	-	-
b. Farmers (Formal)	No	300	-	-
c. Farmers day (Livestock & Farmers)	No	57	-	-
d. Farmers Training	No	550	-	-
<u>12. Research</u>				
a. Trial Plots	No	195	195	11

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
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13. Training Offers by

a. MFTW Centre

- Reorientation

DFO's & Senior Officer Rangers, JT's SC Overseer	No	60	-	-
	No	40	-	-

- Continuing

Senior Officers	No	180	-	-
Trainers	No	200	-	-

b. Both MFTW Centre & Trainers

- Community Forestry Assistants	No	360	-	-
- Catchment Conservation Officers	No	40	-	-
- Certificate Technicians	No	100	-	-
- S & WC Assistants	No	80	-	-
Total of a+b		1,060	1,065	814

c. Trainers

- Panchayat Forest Foreman	No	860	-	-
- Panchayat Forest Watcher & Forest Guard	No	1,000	-	-
Nurserymen	No	320	-	-

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
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d. Participant Training
Short Term

- U.S.	No	63	39	25
- Third Country	No	-	55	17
- India	No	-	-	5

Long Term

- U.S.	No	49	58	-
- Third Country	No	-	9	-
- India	No	117	117	-

Table A-1 Targets and Achievements (continued)

Activity	Unit	Actual 5 yr. Target (from RCUP Implementation Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
<u>14. Inventory & Monitoring</u>				
a. Hydrological Survey	Ha.	350,000	270,000	239,400
b. Geographical Survey	Ha.	491,600	364,000	382,800
c. Soil Survey	Ha.	450,000	300,000	294,339
d. Land Capability Survey	Ha.	260,500	260,500	22,300
e. Hazard Mapping	Ha.	260,500	260,500	260,500
f. Impact Evaluation (run off plots)	No	15	15	12
g. Documentation (Plot Points)	No	270	270	265
h. Farm Planning	Ha.	1, 837	-	-
i. Adaptive Research	No	7*	12	11
j. Panchayat Development Plan	No	-	8	7
k. Climatological Studies	No	16*	16	16

* Provided by SECID

Table A-1 Targets and Achievements

Activity	Unit	Actual 5 yr. Target (from RCUP Imple- ment Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
15. Women in Development		-	-	-
16. <u>Energy</u>				
a. Improved Stove Dis- tribution No		190	190	1,109
b. Solar Heater & Drier Dis- tribution No		54	54	52
c. Wind Mill No		5	-	-
d. Micro-Hydro Plants Fea- sibility & Design No		3	-	-
e. Bridges No		5	-	-
f. Multipurpose Impoundment Feasibility & Design No		1	-	-
g. Bio-gas Mill No		-	1	1
h. Paddy Thresher No		-	-	18
i. Corn Shel- ler H/o No		-	-	148
j. Bee Hive No		-	-	1
k. Energy Exhibition No		-	-	1
l. Water Mill No		-	-	5

Table A-1 Targets and Achievements

Activity	Unit	Actual 5 yr. Target (from RCUP Imple- ment Plan Jan. 1981)	Revised 5 yr. Target from Extension Paper	SECID Briefing Book Financial Status Section Based on HMG FY 1984/85 Program (yr. ending July 1985)
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17. Small Local Work

a. Irrigation				
- More than 50 Ha.	No	6	6	4
- Less than 50 Ha.	No	22	11	5
b. Drinking Water				
- Large (More than 15,000 Population)	No	6	6	6
- Small (More than 15,000 Population)	NO	16	17	14

Table A-2

BUDGETS OF LINE AGENCIES FOR FIELD PROGRAMS

for FY 80/81 to 84/85

(from SECID's RCUP Evaluation Briefing Book)

Line Agency	in '000 U.S. Dollars			in '000 Nepalese Rupees		
	HMG	USAID	TOTAL	HMG	USAID	TOTAL
DSCWM	340	1,263	1,603	5,849	21,724	27,573
DOF	176	690	866	3,023	11,864	14,887
FSRO	93	101	194	1,597	1,743	3,340
MFTW	195	56	251	3,360	961	4,321
DOA	219	261	480	3,773	4,487	8,260
DLDAH	257	443	700	4,423	7,622	12,045
DWSS	38	374	412	652	6,436	7,088
DIHM	144	524	669	2,480	9,019	11,499
MPLD	121	908	1,029	2,083	15,619	17,702
MPLD/DWS	-	17	17	-	285	285
TOTAL	1,584	4,637	6,221	27,240	79,760	107,000

APPENDIX - B

LESSONS LEARNED

In order to systematically approach the task of identifying lessons learned, the evaluation team first summarized the observations of the RCUP staff on problems and recommended solutions as presented in the Briefing Book and in their oral presentations to the evaluation team. The evaluation team, then added their own experience gained during the evaluation process. These two sources of information were organized into a presentation of lessons learned about overall project design and implementation. Because manpower development and facilities construction became major thrusts of the project, separate sets of recommendations are given for each of these activities in the evaluation.

The recurring themes reported by RCUP staff were the following:

- 1) The complexity of the project hindered clear understanding and resulted in a slow start.
- 2) There has been a general lack of integration and coordination between the components of the project both between line agencies and within RCUP staff.
- 3) The project was understaffed (HGM) for the job that was to be done.
- 4) There has been a lack of peoples' participation partly because of a lack of clear objectives, and partly because of the long-term perspective required of conservation benefits.
- 5) There has been insufficient technical support in terms of central supervision and available technology in some components.
- 6) Both, political and legal considerations have made a complex project even more difficult.
- 7) The difficult terrain and physical remoteness have created problems in implementing programs over the large watershed areas.

The various solutions or recommendations to the above concerns from the RCUP staff can be grouped into the following:

- 1) More frequent project central staff supervision, technical assistance, and coordination of field activities is required.
- 2) Project components should be integrated in both planning and implementation.

- 3) Field staffing should be increased and more realistic targets set.
- 4) Increase in-service training and merit incentives to field staff.
- 5) Clearly define roles of Catchment and Panchayat Committees and consider formation of village committees.
- 6) Intensify monitoring and evaluation including training and supervision in accounting and reporting procedures for field personnel.
- 7) Extend project to District boundaries.
- 8) Coordinate adaptive research and field activities.
- 9) Make technologies and materials available to Districts
- 10) Increase near-term benefits to people from conservation practices.

A). Overall Lessons Learned

1.) Project Design

- a) Complex problems like watershed conservation in Nepal require complex approaches for their solution. In selecting the components to include in developing an effective approach, it is important to identify those components that are essential to the project purpose and those that are related but not essential.
- b) Once the essential components are identified for project purposes then it is better to work on the integration of these components on a small area to develop a working model rather than begin components at many sites but without integration.
- c) In the design phase of a project it is important to prevent those working on the design from giving local people the impression that design activities will insure implementation.
- d) In designing a project where effective field activities are highly dependent on trained manpower, care should be taken to phase the scale of activities to the flow of returning manpower.
- e) RCUP is primarily a process oriented project. It is designed to set in motion an approach that will expand to other areas and, in the long run, result in achievement of conservation targets. The design should reflect this by stating project outputs in terms of process development rather than physical targets achieved.

2.) Project Implementation

- a) Projects involving more than one discipline or department require considerable time and effort to insure coordination and integration. As the number of units involved increases, the amount of time and effort increases proportionately, perhaps geometrically. These extra requirements should be built into the implementation plan for such projects from the start.
- b) Interdisciplinary projects require that special attention be given in early phases to clearly defining the objectives. This needs to be done with the interdisciplinary team as a team-building exercise.
- c) Maintenance of this interdisciplinary approach requires continual efforts on the part of the team leader and team members. One of the more effective methods is the frequent use of team meetings to assess progress toward, and refine, project objectives.
- d) When community participation is a major objective of project implementation, then it is vitally important to explain to the community the precise purpose of the project funds. If this is not done then people's expectations are raised far beyond the projects capability to deliver.
- e) A delicate balance must be achieved between developing a separate project identity and supporting the institutional development goals of such a project. If the project becomes separated from HMG and Nepali customs it will not succeed in the long run even though it may be easier to implement in the short run.
- f) The expansion of government services via an external project has a large impact on community attitudes. If not done carefully through community organization, such a project can create dependency on the part of those helped and resentment on the part of those not helped.

B). Manpower Development

- 1). An early start on degree training (actually starting in design phase) can give a very significant boost to a project as the trainees return to engage in the implementation.
- 2). The use of third-world institutions can be a viable alternative to U.S. training. The project estimated that three participants could be trained in the Phillipines for the same cost as one student trained in the U.S.

- 3). The deputation of line agency personnel to IRNR created a special set of problems for IRNR. The permanent transfer of such persons to the faculty should be encouraged. The use of deputed persons is desirable only on a part time or temporary basis.
- 4). It is important to have a visible faculty development plan to maintain faculty morale and keep good faculty members. The heart of this plan is the provision of advanced degree opportunities.
- 5). Where integration is important to a project, support for in-service training of line agency personnel should include a stipulation for integrated training. Otherwise such training will tend to focus on components, not integration.

C). Facilities Construction

- 1). A qualified and committed engineering staff (both Nepali and expatriate) can make a major construction program work even under the extremely difficult physical conditions of Nepal.
- 2). If buildings are considered absolutely essential to project activities then the design should be sensitive to local building custom and attitudes of people regarding such new buildings. If not deemed absolutely essential, building programs should follow successful progress.
- 3). If sites are provided by HMG and pose special, costly construction problems, make the HMG aware of the costs of corrective measures and the resultant reduction in project available funds.
- 4). All contract documents produced by consultants must be thoroughly reviewed and checked by the client. Field review of sites and construction design is essential for all major construction activity.
- 5). Do not commit the project to a major construction activity without a feasibility study. (RCUP made commitments with respect to hydro-powered irrigation schemes without such studies).
- 6). Instead of relating architect consulting fees to length of time on the project, a better arrangement is to link the release of fees to progress of contractors.
- 7). Where contractors are inexperienced, provision should be made to reject bids too low and call for rebidding.
- 8). Wherever possible the same consultant should do both the design and construction supervision work.

APPENDIX - C

EVALUATION OF EXTENSION PAPER

The Project Extension Paper was developed at a time when it was assumed there would be \$ 7,293,000 available for the period Oct. 1985 thru September 30, 1988. As of this evaluation, the amount remaining of the total \$ 27.50 million project funds is only \$ 1.9 million for F.Y. 86-87 and 87-88. Furthermore there are students out of the country working on degrees and approximately \$ 400,000 will be needed for their completion. Effectively that means there is only \$ 1.5 million remaining for activities during U.S. F.Y. 1986-87 and 1987-88. Considering these limited funds, the evaluation team does not recommend RCUP project extension beyond U.S. F.Y. 1986. An alternative use of the remaining funds is prescribed in the Recommendations chapter.

The team has commented in detail on the progress of the project to date in Chapter IV of the evaluation report and on the evaluation issues in Chapter VI. Therefore, in this Chapter our comments are focused on the concepts in the Project Extension Paper.

A. Overall Concepts

Underlying the problems with the RCUP is the failure of the project to ever grasp fully the meaning and potential, of watershed management. The project extension paper finally comes close to the recognition that watershed management is an integration of soil, plant, and water management as a system. The system as the hill farmer of Nepal must manage it is indeed a very complex one but the major resource units in this system are cultivated lands, grazing lands, and forest lands. Because grazing lands are usually under communal ownership and forest lands under varying degrees of communal or government control, all three sub-systems must be considered in any workable scheme of management. The project extension paper recognizes this systems approach in part but does not emphasize that this system must be managed as an integral unit and that a basin the size of those chosen (or a district) is not the appropriate level for implementation. Rather, a small system (approximately 5 to 10 sq.km) is the appropriate size for Nepal hill conditions. If this size is used for implementation then such units can be planned with people, using district, panchayat and village level organization and under a nation's technical planning framework that use the large watershed (or river basin) as one type of overall planning tool.

The Project Extension Paper appropriately realize the need to reduce the number of components and focus on the integration of these components. The evaluation team in its recommendations follows the same approach but suggests even fewer components - soil conservation, forestry, range/

pasture management, and agronomic fodder production . Further, the evaluation team emphasizes the need to focus on small watersheds in the 5 to 10 sq.km. size range for a full integration of these components.

Linkage with the new Agricultural Research and Production Project (ARP) is correctly emphasized. The evaluation team believes that the farming systems approach when applied to the hills of Nepal will identify very quickly the necessity of working with a larger system than the individual farm. The intricate relationship between the individual farm, the communal grazing lands, and the use of forest lands for grazing and fodder suggests that the small watershed is the "farming system" in which the hill farmer of Nepal operates. Thus there should be a very close working relationship between the small watershed program and ARP.

The narrowing of project focus and the ranking of the activities based on their degree of impact on the environment and management of natural resources (pp 21-22) is accurate but the evaluation team would emphasize that forest management includes management of grazing in forest areas.

Institution building at IRNR is recommended as the first priority of the evaluation team for the use of remaining project funds. The limited funds remaining however, suggest that these should be channeled directly from USAID to IRNR. The essential ingredients recommended in the Extension Paper are covered in the evaluation team's recommendations thru proper support for basic operations, and an applied research fund. The concern for practical watershed management is built into each of the recommendations.

In the Implementation chapter of Section IV the Project Extension Paper lists a number of considerations. The evaluation team endorses these considerations for any follow-on activities. Several are discussed in the following paragraphs.

The evaluation teams recommendations go even further than those in the Extension Paper in regard to using GON departments. The team recommends that for the next two years (FY 86/87 and 87/88) a significant amount (approximately \$ 600,000) be invested directly in MFSC to implement a program of demonstration watersheds thru use of a Watershed Development Unit. This Unit would assist District Officers in the following items listed in the Extension Paper "considerations":

- 1) Integration of area wide comprehensive project planning and implementation with the structure and processes of local representative government in accordance with GON decentralization from field activities.

- 2) Identification and analysis of possible incentives (and current disincentives) for local participation.
- 3) Careful attention to developing practical systems for internal monitoring and evaluation of and feedback from field activities.

The review of implications of the SECID benefit/cost study is advisable. The implications for strong continued support of IRNR are quite evident not only from the cost comparison study but for other reasons as well. The evaluation team is reluctant to draw too heavily on the results of the other component analyses until more actual field data is obtained. Although the methodology is not questioned, there is essentially no primary field data upon which conclusions can be based.

The integration of results of the "village dialogue" (Gaun Sallah) process and the Panchayat Resource Development Plans into the setting of project targets is a crucial consideration. This is the only real integration that the evaluation team observed in RCUP. The problem, as the evaluation team sees it, is that because there was no plan for integration of resource components, this process ended in a line agency, target-driven approach to resource management. This is certainly not what should be the case in an integrated watershed project!

B. Components

1) IRNR Strengthening

The continuing need for senior scientists is certainly there. The facilities at Pokhara plus the general attractiveness of Nepal for natural resources persons should be strong inducements for obtaining faculty from all over the world as visiting scholars. IRNR should capitalize on this opportunity thru a visiting scholars program. These persons if carefully selected for international administrative, teaching, and applied research experience can bring both immediate and long-term help (through their home institutions) to IRNR.

1) Increasing Capacity of GON Resource Agencies

The emphasis on training mid-and lower level staff is well placed. This should be part of the job description of line agency officers and be linked closely to the development of demonstration watersheds.

3) Forest Management

Continuation of district programs for tree planting should continue as long as adequate protection is planned. These activities should become part of the ongoing programs of the line agencies involved. Although not mentioned, there is a good opportunity to test the use of private nurseries. The coordination of IRNR and research activities of MFSC should receive increased attention. The evaluation team included this item in its recommendations for IRNR and MFSC. As with all components, greater emphasis should be placed on component integration. The concept of minimizing use of fencing should be a part of any continuing program.

4) Pasture Management

The evaluation team agrees that this is one of the key elements to a successful watershed program. Stall feeding and fodder trees are important pieces of the puzzle but the total system including community grazing land, forest grazing, forage production on cultivated lands, and animal improvement are intimately linked together and should be treated as a sub-system within the watershed. Both Upper Mustang district and the upper reaches of the Daraundi are good sites to establish a demonstration range management project.

5) Soil Conservation Works

The emphasis on biological methods is correct. The best conservation is a good vegetative cover of forests and grasses and the use of cultivation on land within its capability. There is an old conservation rule. "Use every acre (hectare) according to its capability, treat every acre (hectare) according to its need". Translated to Nepal conditions this means developing and utilizing a realistic land capability classification as the basis for all land use in the watershed. The extension paper seems to overemphasize the importance of rehabilitation (biological or structural) as compared to protection. Protection involves controlled grazing of pastures and forests, care in building roads and trails, providing of safe disposal of water from terrace and irrigation systems. The advantage of protection measures is that they are normally much cheaper than rehabilitation work and often have a relatively quick payoff in increased production. Even rehabilitation work should stress biologic techniques over structures wherever possible.

6) Agriculture Production

The production of fodder or hay is one the key uses of cultivated lands that relates directly to soil conservation because of the linkage to livestock grazing system discussed under pasture management. The stress on agroforestry,

especially on fodder trees, should be given a high priority in follow-on activities. The linkage of the Agricultural Research and Production Project with watershed management is discussed in part of this chapter.

7) Other Components

The evaluation team recommends that other components should be the responsibility of other agencies or programs and be funded by them. Watershed Management technical assistance should be given to the responsible agencies for small scale irrigation and drinking water projects to insure protection of water supplies and prevention of erosion damage.

8) Technical Backstopping

The problems of technical backstopping would be reduced considerably if the follow-on activities are limited to the four recommended by the evaluation team. The district officers of the four line agencies supported by the recommended central Watershed Development Unit should be able to handle most of the backstopping.

9) Inventory and Monitoring

Throughout the Extension Paper the impression is given that there is a monitoring system. In fact the evaluation team found no such system for field accomplishments other than target reporting. Both the Field Activities Monitor and the Project Impact assessment plan are aimed at improving the monitoring system. The evaluation team believes that increased emphasis should be placed on monitoring by the line agencies. To accomplish this the team recommends formation of a Watershed Development Unit that will monitor watershed activities. However this should not replace a better system of monitoring for each of the line agencies.

The PIAP is a significant step in improving monitoring. The system lacks a qualitative check. Perhaps this could be covered by providing a system of spot checks. For example if the reporting format includes precise information on who, where, and when of forest plantations then it would be possible to systematically spot check survival. The emphasis on severely eroded areas is an appropriate indicator for soil conservation works, in addition the total are under conservation management should be added as a general indicator of watershed management progress. The economic value of labor changes, it may be more meaningful to express participation as a percentage of total expenditures for certain types of practices.

10) Technical Assistance

The budgetary changes discussed earlier in the chapter alter the prospects for implementing the recommendations for technical assistance. The evaluation team suggests that the duties of the Field Activities Monitor be shifted to the Watershed Development Unit recommended for MFSC. Management of activities during the proposed extension period could be handled directly by USAID if the IRNR and field programs were funded directly. The positions recommended by IRNR could be filled in part by the recommended visiting scholars program. The Assistant-to-the-Dean position could be filled by a direct contract thru USAID or possibly by a visiting scholar.

C. Summary

The Project Extension Paper was written based on a budget of \$7.2 million remaining in RCUP. At the time of this evaluation only \$ 1.9 million will remain in the budget for FY 86/87 and 87/88. Therefore the plan is not feasible. The general concept of reducing the number of components is sound. The evaluation team recommends even a further reduction and a focusing of these components on a series of small model watersheds spread over the three Districts. Instead of large use of expatriate, the evaluation team proposes the internalization of as much activity as possible within MFSC by the formation of a Watershed Development Unit.

APPENDIX - D

RCUP EVALUATION TEAM RESPONSES

TO

SPECIAL EVALUATION RECOMMENDATIONS

A. Integration and Coordination

Recommendation 1:

The NCCNR has potentially a very important role to play in the formulation and coordination of national policies and programs for resource conservation. Thus far it has not done so, however. The Council does not have any supporting staff and this may have contributed to its relative weakness. It is recommended that consideration be given to providing some sort of back-up support to help the Council play a more active and meaningful role.

Response 1

Only a couple meetings have taken place in the past, but meeting did take place while this evaluation was underway.

Response 2

There is no evidence that NCCNR has been effective.

Response 3

The description of responsibilities in the project evaluation paper are perfectly alright.

Response 4

In our meetings with the National Planning Commission it was suggested that NCCNR be of high enough stature to fulfill its responsibilities to the National Planning Commission.

Recommendation 2:

The coordination efforts that have been carried out thus far have been focused primarily on bringing together in time and place the related activities of the various line ministries. For the most part, the programs of each department, while increased in scale, do not appear to have been altered significantly to reflect the underlying conservation purposes of the RCUP. Mechanisms are in place, particularly at the district level, to reshape gradually the programs of the departments such as Agriculture and Livestock so that they more effectively take into account the watershed management focus of the RCUP. Both ongoing and new programs should be reviewed from this point of view.

Response 1

We found very little evidence of integration of line agency activities on a watershed basis. This is discussed in further detail in the evaluation section of this report.

Response 2

The programs of each department have increased in scale, and some new components added (e.g. extension) and some components dropped (e.g. livestock distribution).

Recommendation 3:

The Catchment Conservation Committees, at least in the Myagdi and Gorkha Districts, appear to be playing an effective role in the coordination of line agency activities. In both cases, the elected Chairman provide knowledgeable and aggressive leadership. However, the Chairman have demanding, full-time positions with a wide range of political and administrative demands on their time. While they are, to some extent, supported by the Catchment Conservation Officer and the Local Development Officer, both of these persons are primarily occupied by the activities of their departmental programs. The impact of the District Chairman on the problems of planning, monitoring and coordination could probably be increased if they had more direct staff support. It is suggested, therefore, that consideration be given to providing a planning or program staff officer to support the Chairman in the RCUP catchments. This could be done on an experimental basis using project resources.

Response 1

A specific person has not been assigned as staff officer.

Response 2

Increased interaction between CCO and District Panchayat Chairman is taking place.

Response 3

Progress on this recommendation has been hampered because the relationship between the LDO and CDO has not been clearly defined.

Response 4

The GON is in the process of imposing a hiring freeze and greatly reducing the use of temporary positions in response to pressure from the IMF. Therefore creating a new position may not be possible.

B. Organization and Operations

Recommendation 4:

The Project Implementation Committee has proved to be somewhat cumbersome for dealing with routine problems involving inter-agency coordination. One suggestion is to establish a smaller, more manageable committee with the RCUP Coordinator, representatives from the key line departments and the USAID to help the Coordinator resolve implementation issues falling outside the Coordinator's authority. This suggestion should be reviewed and considered as soon as possible.

Response 1

Evaluation team found no evidence of regular meetings among the group as recommended.

Recommendation 5:

In some technical fields the SECID advisory team has not been adequately integrated into the work of either the RCUP Central staff or of the line agencies. There are several reasons for this. However, a concerted effort should be made to correct this situation so that the benefit of the considerable expertise available in the team can be more completely utilized. Some thought might be given to providing team-building type of management training for key personnel, both Nepali and expatriate.

Response 1

Little evidence of formal integration was found below the level of the SECID manager and the RCUP project coordinator. However integration is occurring on an informal basis.

Response 2

Little evidence of team-building type of management training for key personnel was found.

Recommendation 6:

The Catchment Advisors' role under the SECID team has not been adequately defined, and their activities in the districts have not been generally fruitful. The role of the Catchment Advisor should be re-examined. Rather than stationing advisors in the field, with all the complications that entails, it might be sensible to provide one expatriate based in Kathmandu whose time would be devoted to field coordination and monitoring activities. A natural resource generalist might be more suitable than a specialist. This position might also be used to backstop the staff officers proposed for the District Chairman.

Response 1

Both SECID Catchment Advisor positions have been eliminated in Gorkha and Beni.

Response 2

The natural resource generalist position has not been filled, but was proposed in the Project Extension Paper.

Recommendation 7:

Most of the Kathmandu-based SECID advisors will be completing their assignments in 1983. Continued advisory assistance will be warranted, though not necessarily on the same scale or in the same skill categories as represented on the present team. Immediate attention should be given to the definition of future requirements. Taking into account the availability of local talent, consideration should be given to the following areas of need.

Extension: Outreach and extension work in all disciplines has been minimal so far. A greater effort is needed to train village-level and district-level workers to promote activities to encourage popular understanding and support, and develop activities designed to reach the farm family and women.

Range Management: An experienced range and pasture management expert, working with an anthropologist, could make an important contribution to project objectives.

Local Level Planning: Staff support for this effort should continue to be given a high priority.

Watershed Monitoring: Consideration should be given to bringing in an experienced technician in watershed management to help with this assessment.

Response 1

The recommended Extension Specialist position has been filled by a highly qualified Nepali.

Response 2

HMG has assigned full time extension specialist in each of the three districts.

Response 3

DSCWM extension officer left for training in the U.S. after only seven months in the position. Also the expatriate extension specialist completed his tour of duty in the SECID office and left in August of 1984, leaving only one extension specialist.

Response 4

There is still no range and pasture management expert.

Response 5

The antropologist completed his assignment in Fall, 1984.

Response 6

The SECID social scientist position has been filled by a well qualified Nepali.

Response 7

No expatriate watershed management technician has been brought in.

C. Local Participation

Recommendation 8:

The development of mechanisms for increasing local participation in planning and implementation of RCUP activities should continue to be a high priority for the RCUP central staff. However, greater attention should probably be given to utilizing the structure of local representative government with its established linkages downward from the district to the village panchayats rather than involving central staff extensively in working directly with villages.

Response 1

Some progress has been made in both planning and implementation. Relatively more progress has been made in planning.

Response 2

More progress would have been made in implementation had RCUP been designed on the premise that local contributions were a pre-condition for RCUP activities.

Response 3

More progress would have been made in both planning and implementation had the decentralization process been more clearly defined by HMG.

Response 4

This issue is more fully discussed for each project component and for the overall project in the Evaluation section of the report.

Recommendation 9:

The women in farm families in the Hills play a major role in agriculture. Among other duties, they are usually the fuelwood and fodder collectors. Therefore, they are of special importance to the success of any conservation and production program. Although the women's organization is represented on the Catchment Conservation Committees, otherwise the RCUP has not been as effective as it should in including women in its activities. Even the SECID team does not include a female member. A greater effort should be made by the RCUP to increase the participation of women, both in field activities and project management.

Response 1

Ten percent of the students entering IRNR are women. The first class to complete the BSc course work included one women. Six women students with RCUP scholarship completed the certificate level course.

Response 2

In each of the RCUP districts, women's development officers have been appointed under MPLD with RCUP support.

Response 3

Women are not involved in project management beyond the administrative officer level.

Response 4

The female Nepali Social Scientist has left the RCUP Central staff position to pursue Ph.D. studies.

Response 5

The current Deputy Secretary of the Women's Development Section of MPLD received training under RCUP.

D. Education and Training

Recommendation 10:

Although the RCUP is conceived of as an integrated, multi-sectoral project, the design and implementation of the training aspects of the project has lacked an inter-disciplinary flavor. Each of the elements has been carried out with only modest integration or coordination. For example, the largest component, the establishment of the Institute of Renewable Natural Resources, has been treated almost as a separate project by the USAID and the GON. A greater effort should be made, therefore, to integrate the education and training activities into the overall scheme of the RCUP and to ensure that course content adequately reflects the multi-sectoral, local impact focus of the project.

Response

IRNR is still mostly a stand alone component of RCUP (as discussed in the evaluation chapter). There is a research building for IRNR under construction at the Gorkha District Center. There have been a few faculty and students from IRNR who have worked on the Daraundi Watershed. No evidence was found of IRNR linking with RCUP field activities in Mustang and Myagdi. Curriculum issues are discussed in the IRNR individual component section of the evaluation chapter. There is a small watershed study underway in the Daraundi Watershed by IRNR faculty. Also

IRNR is working on a comparative land capability assessment in one panchayat of the Gorkha district.

Recommendation 11:

As presently planned, training at the Institute for Renewable Natural Resources will include work at field sites geared to experimenting with conservation technology. However, thus far no plans have been made for a research component utilizing the staff and facilities of the Institute itself. As the Institute evolved, it should logically develop a relevant research role related to the country's long-term requirements for natural resource protection and development. It is not too early to consider this issue and its implications for physical facilities and advisory and other staffing.

Response

IRNR field research activities were observed at Hetauda and several remote field sites. As indicated in no. 10 above, plans have been made for research based out of the Gorkha Administrative site. Also plans are made for the new campus at Pokhara. A research committee has been formed in the faculty at Hetauda. There is still need for a comprehensive research plan and an ongoing research advisory committee. These topics are receiving intensive consideration in the new IRNR project being developed by USAID and RCUP.

Recommendation 12:

The technical advisory personnel attached to the Institute are responsible for developing and teaching a curriculum for the degree programs conducted by the Institute. In the meantime, the future Nepalese staff have been selected and sent abroad for advanced training. As presently planned, the expatriate staff will have only minimal overlap with their counterpart instructors. The testing and institutionalization of the curriculum being developed could probably benefit from a somewhat longer presence of expatriate advisors than is presently planned. This issue should be considered carefully so that appropriate arrangements for follow-up staff can be made to avoid any break in continuity.

Response 1

SECID has provided an assistant to the Dean for the full five years.

Response 2

A civil engineer/hydrologist was assigned to the project/IRNR.

Response 3
SECID and USAID have been involved in developing a project to fully support the further development of IRNR.

Response 4
RCUP has arranged for several Peace Corps Volunteers to supplement faculty at Hetauda.

E. Scale of Environmental Problems vs. Scope of RCUP

Recommendation 13:

There were good and sound reasons for the process which was followed in initially setting targets for the RCU Project. Indeed, the complex interaction between population growth and the many physical variables which impact on environmental degradation doubtless makes it impossible to establish physical targets which can guarantee project success. Nonetheless, it would be sensible to review the targets adopted for the RCUP and attempt to relate them to the scale of the environmental problems in the two catchment areas in which the RCUP is operating. The availability of recent aerial photography and other improved data should make this easier than it was earlier. Indeed, a periodic review of project targets should be undertaken to determine whether they are still relevant in terms of scale as well as definition.

Response 1
A Land Hazard Map is being developed and serve as the basis for review and adjustment of targets for correction of land degradation.

Response 2
The project conducted a field survey of sixty improved chulos (stoves), the results of which will be used to assess effectiveness of that program as the basis for target adjustments.

Response 3
Panchayat Development Plans are being redefined to reflect acquired data regarding Geology, Geomorphology, and Land Hazard Mapping.

Response 4
In consultation with Catchment Conservation Committees, "previously proposed single, expensive multi-purpose impoundment project should now be replaced by several less expensive ones.

Response 5

District budget planning with line agency personnel Catchment Conservation Officers suggest 1) more improved stoves 2) more improved trials, 3) revision of the turn key construction program 4) additional MOFSC Training Wing training, 5) reduction on the scope and design of small scale drinking water and irrigation projects have been revised.

Response 6

DSCWM submitted a Strategy Paper on Conservation of Nepal's National Resources to the National Planning Commission.

Response 7

A review of on-going mini-hydro feasibility work undertaken by SECID resulted in a decision to continue.

Recommendation 14:

Related to the matter of establishing project targets is the importance of learning systematically from the experience being accumulated. At present, the evaluation and monitoring program of the RCUP is primarily a monitoring program which tracks progress in implementation. The central staff of the RCUP should establish a more systematic evaluation program which assesses the effectiveness of the various interventions carried out by the line departments from a physical, biological, social and institutional development perspective. This will help ensure that the lessons learned can be fed back into project operations.

Response 1

Project implementations including HMG, SECID and AID were trying hard to get all components, off the ground and undoubtedly delayed establishment of a monitoring program.

Response 2

Although monitoring and evaluation were stressed as being key components in the Project Paper, Implementation Plan, and Project Extension Paper, there is no staff for the Monitoring and Evaluation Unit. Monitoring efforts have been scattered, disorganized, and incomplete even though USAID has been insisting on adoption of the Community Forestry model.

Response 3

The project extension paper includes a PIMP (PIAP).

Recommendations 15:

In the original project design and approval, provision was made for an evaluation at the end of the third year to review progress and to consider the possible extension of project activities into two additional catchments. Since the project was initiated in 1980, this evaluation was scheduled tentatively for the later part of 1983. In view of the fact that field activities under the project really got underway only in mid-1981 and in light of this current special evaluation, it is recommended that the proposed evaluation be deferred until some time in 1984.

Response

Present evaluation is addressing this recommendation.

APPENDIX - E

SMITH/KORNS REPORT

OVERVIEW

The Smith and Korn's report gives some very useful ideas on impact, monitoring and contextual indicators. Their recommendations are useful to RCUP in varying degrees being most appropriate for forestry and least appropriate for the soil conservation component. The specific application to RCUP project components is discussed in the following sections.

The RCUP Evaluation Team supports the development of HMG/N agency-wide systems of monitoring and evaluation such as that prepared for HMG/UNDP/FAO Community Forestry Development Project. This approach is seen as being more productive for Nepali institution building than monitoring systems for individual projects. The appropriate level for this activity within the organization is best decided by the agency itself but Regional participation is suggested. Projects would then monitor only those things unique to the project.

The Smith/Korn's report suggests spot checks for "small scale difficult to check" activities. We suggest that for the hill country of Nepal most activities are difficult to check and an evaluation system should make very heavy use of the spot check approach. This requires careful reporting of what, where, and by whom activities were performed.

The RCUP Evaluation Team agrees with the observation that goal measures "suffer from a lack of direct correspondence with major project activities and from severe measurement problems". The evaluation team questions whether projects should do much contextual monitoring in these types of "process" projects. On the other hand we strongly support the idea that peoples participation and acceptance of programs within a target area should be carefully monitored. These type of indicators are a good measure of the potential for extrapolation of programs to larger areas.

Soil Conservation

The recommendations are marginally useful for RCUP since they focus on structural measures rather than vegetation (or biologic) control. RCUP however has emphasized vegetation control from the very beginning and the team feels, properly so.

The appropriate measure for vegetation control is the percentage of land under some form of conservation treatment compared to the land in the management unit i.e. sub-watershed, Panchayat or District. In order to distinguish the intensity of work needed a simple separation of critical areas should be made within the management unit. District officers with available maps and

aerial photos are quite capable of delineating these critical areas. These areas approached on a small sub-watershed basis ranging in size from 1 to 10 sq.km. The conservation treatments would include terracing and residue management on croplands; pasture improvement; roadside stabilization; landslide stabilization; water source protection; land protected by trail, gully, catchment ponds; streambank stabilization; and reforestation and forest management. Progress on these components could be tracked on an annual basis for the target watersheds.

District or large basin monitoring is an issue beyond the scope of RCUP and should be built into the monitoring and evaluation activities of line agencies at the regional or national levels.

Agriculture

Although this section is not directly applicable to RCUP because it focuses on indicators for the Agricultural Research and Production Project of USAID, the identification of the four-stage process and indicators for each stage is an excellent example of adapting a monitoring and evaluation system to a process type project such as RCUP. This section does not refer to the draft Benefit/Cost studies of SECID as is done in some of the other sections of the report.

Livestock

Some very important concepts are presented in this section including: 1) the relation of livestock to the environmental problems of the hills, and 2) that increase in fodder production, unless it benefits the small and landless farmer, would not reduce the pressure on the environment. The five components of fodder production and the suggested indicators appear to focus on the essentials of the fodder issue. In the case of RCUP it would be very difficult to get the agricultural statistics without the existence of a farming systems program.

Women

This section gives good guidance on possible indicators but the evaluation team believes there are too many to be workable and that those indicators most readily obtained should be the ones used. For RCUP it is important to add the number of women enrolled at IRNR, the number completing the course, and the number employed in resource conservation jobs. A close follow-up on the women graduates should be implemented by IRNR especially during the first few years. This follow-up should include employment experience and any suggestions for improvement in the IRNR to improve the programs for women.

Rural Works

From the RCUP viewpoint the primary indicator for trail improvement work should be the amount of erosion reduction. For

drinking water schemes the amount of watershed area protected as part of these schemes would be important. Also the amount of increase in stall feeding related to drinking water schemes would be important to RCUP. Both the numbers of acres in irrigation schemes as well as watershed areas above irrigated areas that are projected in relation to the irrigation scheme would be important. One other consideration for irrigation schemes is the careful identification of beneficiaries. Similar to the comments on fodder production, if the small farmer is not benefitted it may have little impact on relieving pressure on the environment.

The qualitative measure of effective local participation is highly important. Perhaps some form of standard evaluation could be used to give feedback to user groups to stimulate their continued participation in maintenance.

Forestry

The methods of monitoring and evaluation of forestry efforts proposed by Smith/Korns are basically sound and relevant to RCUP.

In the area of plantation activity and impact, the five steps from nursery development to the flow of fodder, fuel and timber to the local inhabitants, nicely represents the long term process approach involved in forestry. Nursery production, plantation survival rates, and the survival rate of increase in nursery output are good measures of potential impact, but since the plantation effort is designed to gradually be phased into HMG a private financed operations, the progress of the phase-in should also be monitored. For example a good plantation effort during the course of a project which was not picked up and continued by HMG or a private operator at the project termination would only have a limited impact. On a more technical note, it would be more reliable to assess plantation survival rates after two years rather than one. An emphasis should be placed on accuracy in land area measurements.

The proposal to set targets in terms of the scale of the problem to be addressed over an indefinite time period is good in that it allows more flexibility in approach, (i.e. taking the time to build true peoples participation may actually result in better progress against the problem).

In addressing the evaluation and monitoring of the management of existing forests it is properly pointed out that much higher output could be achieved through management. While the monitoring proposal is valid, a first step should be to evaluate the quality and appropriateness of the management plans themselves, not only the implementation.

As mentioned earlier in this section, this evaluation team also recommends the adaption of the Community Forestry Evaluation and Monitoring system agency-wide.

APPENDIX - F - 1
FIELD TRIP ITINERARIES FOR KALI GANDAKI TEAM

September 6 - 23, 1985.

<u>DAY</u>	<u>FIELD ACTIVITY</u>	<u>LOCATION</u>	<u>PEOPLE TO MEET</u>
1.	- LOF Plantation	Jomsom	DFC (Mohan Koirala) RCUP Engineer (Raju Kumar)
	- Buildings	Jomsom	
	- Water Source Protection	Samle	CCO (Rajendra Lamichani)
2.	- General Organization and Effectiveness of the Project:		DLDAH Range Mgt. Office (T.N.Pandey) LDO (K.P.Joshi) WDO (N.Kumari Thakali)
	- Optional People to meet:		CDO (S.P.Dahal) District Panchayat Chairman (R.P.Serchan) ADO (A.R.Lohani) DLDAH Veterinarian (H.C.Karki)

At Jomsom, representative field activities conducted in the northern part of Mustang District can be observed. Similarly, the natural resources management problems are readily apparent. Walk to Marpha with Pasang Sherpa.

If time permits Pasture Development, District Panchayat Plantation and Sub-Center buildings will be observed in Jharkot. Instead of spending the day in Marpha, one party may walk up to Jharkot and return via Jhong. Both parties would then met in Marpha a day later. Approximate walking time round trip, 19 hours.

3.	Fruit, Farm Demo. Marpha Green house		Farm Manager (Pasang Sherpa)
	Seed Distribution Marpha		Manager, AIC Office (N.H.Sharma)
	Panchayat Forest Marpha		DOF Ranger
	Irrigation, Community Organization	Chhairo Refugee Camp	

At the Marpha Agriculture Farm, training facilities, demonstrations of horticulture and vegetable production will be reviewed. RCUP has contributed support to the Marpha Farm and works closely with the Farm.

4.	River Bank Stabilization	Tukuche	Pradhan Panch (Amrit L. Sherchan)
	Irrigation Scheme	Tukuche	Plantation Watchman (Sham Prasad Thakali)
	Hydro-electric Scheme	Tukuche	Pradhan Panch
	Water Mill	Kunje	(Prem Tulachan)
5.	Panchayat Protected Forest	Kalopani/Lete	Ranger (Yadav)
	Pasture Nursery	Kalopani/Lete	Livestock Field Mgr. (Shyam Karmacharya)
	Forest Research Plots	Kalopani/Lete	Ranger (Yadav)
	Buildings	Kalopani/Lete	Contractor
	Improvement of Village water supply		Overseer, MPLD
	Fruit Tree Nursery	Ghasa	Nursery Naik
	Buildings	Ghasa	Contractor
6.	Bridge	Rupse Chharaha	
	Forest Nursery Training	Dana	Nursery Naik (Thaman Bahadur) Soil Cons. Assistant (Suresh Adhikari)
	Buildings	Dana	Contractor
7.	Micro-hydro	Tatopani	Gauchan
	Biogas	Tatopani	Gauchan
	Buildings	Tatopani	Contractor (B.P. Gauchan)

- | | | | |
|-----|---|-----------|---|
| | Landslide Stabilization | Sikha | PVC - Mike Shean,
Wendy Greenberg |
| | Block Terrace Improvement | Paudar | Ward Chairman
(Dhan Bdr. Garbuja) |
| 8. | Fish Pond | Galeshwar | Ex-Pradhan Panch
(Bil Bdr. Karki) |
| | Water Source Protection | Galeshwar | Pradhan Panch
(Nar Bahadur) |
| | Improved Stoves | Galeshwar | Stove Technician
(Bal Bdr. Pun) |
| | Forest Nursery | Beni | DFC (Prajapati) |
| | Solar heater, Drier | Beni | DLDAH (Dr.D.Sadhain) |
| | Forest Extension | Beni | Yam Malla |
| | Buildings | Beni | RCUP Engineer
(Bista) |
| 9. | General Organization and Effectiveness of the Project: | | |
| | Discussions with: | | District Panchayat
Chairman (R.B.K.C.)
CCO (K.N.Shrestha)
LDO (R.Gautam)
CDO (P.R.Regmi)
ADO (B.S.Gurung)
DLDAH (D.Sedhain)
WDO (U.L.Pradhanang) |
| | (Various field activities | Jhee | RCUP) |
| 10. | Buildings, Forestry Pakhapani | | |
| 11. | At Beni, the team will meet Lumle field staff. From Beni to Lumle, LAC staff will accompany the team and explain agriculture progress and problems in the area. | | |
| 12. | Agriculture Production | Kusma | Lumle Staff |
| 13. | Agriculture, Forestry Research, Horticulture, and Livestock:
Lumle Agriculture Farm | | |
| 14. | Discussions on Project Coordination with other Donors in the region.
Lumle Lumle Farm Manager
(Graham Garrod) | | |

- | | | | |
|-----|-------------------------|----------|-----------------|
| 15. | Drinking Water | Bhadauri | Levenson |
| | Gully-Landslide Control | Paumdur | Levenson |
| | DSCWM Nursery | Paumdur | Levenson |
| | Panchayat Forest | Banpali | Levenson, Mohan |
| | Species Trials | Banpali | Levenson, Mohan |
| | DSCWM Nursery | Banpali | Levenson, Mohan |

The team will meet the IRNR/Gorkha group at Toripani in the Phewa Tal Watershed. Progress on an established project (10 years) will be demonstrated.

- | | | | |
|-----|--|----------|---------------------|
| 16. | Fodder Production | Toripani | Phewa Tal Watershed |
| | Gabions-Gully Control | Toripani | Project Staff & |
| | Forest Plantations | Toripani | Levenson |
| 17. | Rest/discussion among team members. Pokhara | | |
| 18. | Morning, visit IRNR Campus construction site. M.B.Karki, Campus Chief. Afternoon, return to Kathmandu by road. | | |

APPENDIX - F - 2
FIELD TRIP ITINERARIES FOR GORKHA TEAM
September 9 - 23, 1985

<u>DAY</u>	<u>DATE</u>	<u>FIELD ACTIVITY</u>	<u>LOCATION</u>	<u>PEOPLE TO MEET</u>
1.	Sept.9	General Orientation Staff Devt. Facilities Devt. Curriculum Devt. Research Program	Kathmandu- Hetauda (by road)- (6 hours)	Mr.M.D.Rajbhandari Dean, IOF Mr. M.B.Karki, Campus Chief. IRNR
2.	Sept.10	Visit Campus Facilities Discuss General Organiza- tion and effec- tiveness of Project Component, Progress to date, and future support requirements. Attend classes Meet with students	Hetauda	IRNR Dean, Faculty members & students studying at diffe- rent levels
3.	Sept.11	Community Forestry and Soil Conservation program, Agro- Forestry & Species elimina- tion trials.	Bagmati & Parwanipur	Villagers
4.	Sept.12	General orienta- tion	Hetauda- Gorkha (by road 4 hours)	Mr. G.P.Upadhaya, Catchment Conserva- tion Officer Mr. M.Lal Shrestha Pradhan Pancha, Gorkhali Panchayat
5.	Sept.13	Visit RCUP related offices to discuss the general organization & effec- tiveness of project components (Mr. G.P.Upadhayay will accompany the team during the field visit in the Daraundi Catchment)	Gorkha	Mr. C.P.Upadhayay, Chief District Officer Mr. S.Sharma, Local Development Officer Mrs. B.Shrestha, Women in Development Officer Mr. K.P.Rimal, Engineer, Irrigation Mr. M.Sharma, Divisional Engineer, Drinking Water Mr. N.R.Baral, District Forest Controller

- | | | | | |
|----|---------|---|---|--|
| 6. | Sept.14 | Visit District
Agriculture
Office to discuss
the general orga-
nization & effec-
tiveness of the
project component

Horticulture
Nursery
Phase I building
complex
Road Slope stabi-
lization (with
napier grass and
some physical
Structures)
Forest nursery
Panchayat plantation
Private Piantation | Gorkha
Dandi
Danda

Dandi
Danda
Namjali
Danda | Mr. K.C.Sharma
Agricultural
Development Officer
Mr. L.B.Yadav,
Asst.,
Agri. Development
Contractor, SECID
Site
Engineer, Consultant
Site Engineer
Mr. Amrit Bahadur
Kunwar, Pradhan
Pancha, Ranishora
Village Panchayat
Nursery Headman
Ranger, JT, Selected
farmers |
| 7. | Sept.15 | Trail improvement
Water Source pro-
tection and plan-
tation (unfenced)
Panchayat Forest
Nursery Plantation,
protection &
natural re-gene-
ration of the
Sal trees "Shorea
Robusta" (unfenced)
Sisau "Dalbergia
Sissoo" plantation
on the bank of
river Daraundi
(fenced & unfenced) | Gorkha
Nareshor
Nareshor
Nareshor

Kabre Bagar &
Daraundi Bagar | Mr. Bhairab Basnet,
Pradhan Pancha,
Nareshor Village
Panchayat Villagers |
| 8. | Sept.17 | Panchayat Protected
Forest | Villagers | |
| 9. | Sept.18 | Trail Improvement

Check dams
Panchayat
Plantation | Taranagar

Khol Khole

Khol Khole
(trek &
vehicle
5 hours) | Pradhan Pancha,
Taranagar |

10. Sept.19 Final Discussion, Gorkha Mr. Jagat Bahadur Roka, Chairman, District.
after the field
Visit, with the (leave Panchayat and other
Catchment Conser. Gorkha for CCC members
vation Committee vehicle
(CCC) Chairman & after the
members meeting -
4 hours drive)
11. Sept.20 Meet & discuss the Pokhara Five Regional
general organiza- Director
tion and the effec-
tiveness of the
project component
with the Regional
Directors of Agri-
culture, Livestock,
Forestry, Irriga-
tion and Local
Development (Lunch
13:00-14:00)
Mr. R.H.Upadhayay,
Livestock 10:30-
12:00
Mr. Ram Hari Sharma
Agriculture 12:00-
13:00
Mr. Udaya Raj Shoti
Local Development
14:00-15:00
Mr. Modhan D.Karki,
15:00-16:00
Mr. Indra S. Thapa,
Forestry 16:00-
17:00
12. Sept.21 Visit Phewa Tal Toripani Mr. S.Rajbhandari,
Watershed 8 hrs. trek Manager, Phewa Tal
activity area Watershed
Management Project
08:00 Villagers
- Flight to Jomsom on Saturday & Tuesday
- The team will meet with Myagdi/Mustang group at Toripani in the Phewa Tal Watershed. Progress on an established project (10 years will be demonstrated).
13. Sept.22 Open discussion Pokhara
among the team
members.
14. Sept.23 Visit IRNR Campus Mr. M.B.Karki
Construction Site. Campus Chief, IRNR
Return to Kathmandu
(by road - 7 hrs.)

APPENDIX - G

PERSONS INTERVIEWED

Acting Director/USAID : Mrs. Janet Ballantyne
Acting Deputy Director/USAID: Mr. Don Clark
Program Officer: Mr. George Lewis
Agricultural Development Officer: Mr. Charles Hash
RCU Project Officer : Mr. George Taylor
ARC/USAID: Dr. Burt Levenson
ARC/USAID: Mr. Niranjan M.S.Regmi
PDIS/Engineer: Mr. Jack Pinney
PDIS/ENG : Mr. Paul Gurung
SECID Chief of Party: Mr. Dan Amos
Secretary, Ministry of Forest &
Soil Conservation : Mr. J.Maskey
Director-General, Department of
Soil Conservation & Watershed
Management & Project Director, RCUP: Mr. M.D.Joshi
Chief Conservator of Forests: Mr. M.Haque
RCU Project Coordinaton: Mr.L.L. Rajbhandari
Catchment Conservation Officer/Gorkha: Mr. Gopal Upadhyay
Project Program & Budget : Mr. Narayan S. Gurung
Soil Conservation/Watershed Management: Mr. Mohan P.Wagley
Agriculture/Horticulture/Livestock/Animal
Health : Mr. Rishi R. Sharma
Forestry : Yadav R.Sharma
Vice Chairman of the National Planning Commission: Dr. Mohan Man
Sainju
NPC Member (Forestry): Dr. V.B.Pradhan
Extension : Mr. Yam Malla
Participation/Local Level Planning : Mr. Murari Aryal
Participant Training : Mr. Prajwol M.S. Pradhan
Institute of Forestry/Institute of Renewable
Natural Resources : Dean M.D.Rajbhandari &
Pokhara Campus Chief : Mr. Madhave Karki
Ministry of Forest & Soil Conservation
Training Wing : Mr. B.Bhatta
Renewable Energy/Appropriate Technology: Mr. Gyani Shakya
Soil Survey : Mr. Karen Bannett, Drew Foster & Wendy Greenburg
Construction : Mr. Proyog Pradhan
Joint Secretary: Dr. Tom Wagner with Mr. B.M Kayestha
Under Secretary : Mr. B.R.Ghimre
Director General : Mr. P.P.Gorkhali
Director General, Planning & Training : Mr. S.N.Regmi
Deputy Director General: Mr. M.L.Pradhan
Department of Livestock & Animal Health
Director General : Mr. H.B. Rajbhandari
Additional Secretary, Ministry of Finance: Mr. H.S.Shrestha
Women Development Section/MPLD: Ms. Chandni Joshi
Tribhuvan University, Vice Chancellor: Mr. R.B.Singh
Ministry of Forest & Soil Conservation
Training Wing : Mr. L.B.S. Tuladhar

Department of Irrigation, Director General : Mr. C.D. Bhatta
FAO Integrated Watershed Management & Conservation
Education Project, Chief Technical Advisor: Mr. H.R.Stennett
World Bank/FAO Community Forestry Development
Project, Chief Technical Advisor: Mr. M.S.Ranatunga
Tinau Integrated Watershed Project,
Deputy Director/SATA: Mr. Ben Dolf
ICIMOD, Director : Mr. Colin Rosser
International Center for Integrated Mountain
Development (ICIMOD) Deputy Director: Mr. Ram Prasad Yadav
Nepal-Australia Forestry Project, Project Manager: Mr. Don Gilmour
Rapti Integrated Rural Development Project (ex-PCV Foresters,
RCUP/Myagdi District) : Mr. Mark Conley
Department of Livestock & Animal Health (DLDAH): Mr. R.M.Upadhyay
Ministry of Panchayat & Local Development (MPLD): Mr. U.R.Shoti
Department of Forest (DOF): Mr. I.S. Thapa
SECID/Engineer: Mr. John Davenport
Social Scientist, RCUP : Mr. Murari Aryal

APPENDIX - H

DOCUMENTS USED FOR THE RCUP EVALUATION
chronological listing

- APROSC & SECID - December 1979
PROJECT DESIGN STUDY: Resource Conservation and Utilization
Project, Volumes I-V
- USAID/Nepal - February 1980
PROJECT PAPER - Resource Conservation and Utilization
Project - Project Number 367-0132
- APROSC - November 1980
HOUSEHOLD BASELINE STUDY: Resource Conservation &
Utilization Project
- USAID - February 1981
SECID/USAID COST REIMBURSEMENT CONTRACT
- Brown/SECID 1982
RECOMMENDATIONS FOR; REVEGETATION AND MANAGEMENT OF DENUDED
LANDS IN MUSTANG, NEPAL
- National Research Associates - 1983
IRNR FEMALE CANDIDATE SURVEY
- RCUP/SECID - 1983
PANCHAYAT RESOURCE DEVELOPMENT PLANS (5 plans)
- Development Associates, Inc. - April 1983
SPECIAL EVALUATION OF THE RESOURCES CONSERVATION AND
UTILIZATION PROJECT
- SECID - September 1983
SUMMARY OF ACTIONS TAKEN ON RECOMMENDATIONS OF THE SPECIAL
EVALUATION OF THE RESOURCE CONSERVATION AND UTILIZATION
PROJECT
- White, Fort, and Shrestha/SECID - November 1983
GEOMORPHIC MAPPING of the Resource Conservation and
Utilization Project Areas
- USAID/Nepal - January 1985
Resource Conservation and Utilization Project Project No.
367-0132 PROJECT EXTENSION PAPER 1985-1988
- SECID - March 1985
EIGHTH SEMI-ANNUAL REPORT for July 1984 to January 1985
- SECID/Chapel Hill - January 1981
OVERALL MANAGEMENT IMPLEMENTATION PLAN

HMG/UNDP/FAO/NEP - May 1985
NEPAL COMMUNITY FORESTRY DEVELOPMENT

Shrestha & Rimal - 1985
Report on the NRSC/RCUP LAND COVER IMPACT MONITORING

Smith & Korns - June 1985
MONITORING AND IMPACT ASSESSMENT SYSTEM

Joshi/Forest Survey and Research Office - August 1985
AN INTERIM REPORT ON TREE SPECIES TRIAL IN RCUP AREA

SECID/RCUP staff - August 1985
RCUP EVALUATION BRIEFING BOOD

SECID/Chapel Hill - September 1985
BENEFIT/COST STUDIES: NEPAL, Resource Conservation and
Utilization Project

SECID - September 1985
NINTH SEMI-ANNUAL REPORT (Draft) for January 1985 to July
1985

APPENDIX I

Photo and Note Appendix to the Evaluation
of the
RESOURCE CONSERVATION AND UTILIZATION PROJECT (RCUP)
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT NO. 367-0132
KINGDOM OF NEPAL

September 1985

The following photographs were taken by E. Gerry Hawkes at the Institute for Renewable Natural Resources (IRNR) construction site in Pokhara and during field inspections to the districts of Mustang and Myagdi. Additional black & white photographs were taken by James R. Meiman during field inspections to the Gorkha district.

APPENDIX J

MEMORANDA

10/11/85

To: Janet Ballantyne

From: Jim Meiman, RCUP Evaluation Team Leader

Attached is the final draft of the RCUP evaluation. Much effort has gone into this project over the past 5 years and the team believes strongly that USAID should build follow-on projects on this base. Furthermore it was very evident from our field experience that the people of Gorkha, Myagdi, and Mustang districts are looking to USAID for continued support of conservation activities.

On behalf of the entire team I would like to express our sincere appreciation to you and your staff for the hospitality, logistical support, and full cooperation you have given us. It certainly helped make a very difficult job a little easier. Charlie Hash and George Taylor were most helpful at every stage. N.M.S. Regmi, Burt Levenson, and Paul Gurung did an excellent job as field guides, interpreters, and explainers of USAID programs. Many other support staff - motor pool, travel, etc. have been most cordial and helpful. You can certainly feel proud of the competency and dedication of the Nepal mission.

10/11/85

To: Laxman Rajbhandari
Dan Amos

From: Jim Meiman, RCUP Evaluation Team Leader

On behalf of the entire team we wish to thank you and the RCUP staff for all the assistance provided. Having been on the other end of evaluation many times I know the frustration and disruption they cause. We appreciate your good-natured tolerance and the open discussions we've had with you and all the staff during the evaluation.

10/11/85

To: M. Karki

From: J.R.M.

SUBJECT: Summary of Our Discussions at Pokhara re IRNR and some for-what-their-worth suggestions.

1. Departmentalization - You need some assistance in managing faculty by placing them in functional units. The tendency is to follow traditional departmental lines, but this can be counterproductive to an integrated resource view. An alternative would be to group faculty by function the way we manage (or should manage!) natural resources, i.e. basic sciences, inventory and planning, ecosystems, integrated resources management, and natural resources policy. Whatever organizational units are chosen, it is important to provide for integration from the beginning. If traditional departments are set up, then at the same time, set up functional units such as the above and have each faculty member join one of these in addition to his departmental home. Hold some funds to support these functional groups in research, teaching and extension activities. Most traditionally organized forestry schools in the U.S. have had a very difficult time organizing for the interdisciplinary activities so vital for effective natural resource management. Learn from our mistakes!

2. Coordination with line agencies and other "user" groups. - Form one or more advisory groups from those agencies and institutions that will employ your students. Get their advice on curriculum and research needs. Select this group so that its members can help you get support from T.U. and line agencies as well as giving you good advice.

3. Science Background of Students - There are many auto-tutorial and supplemental materials, especially for the basic sciences. Set up some remedial programs so that those students coming from the certificate level program can make up deficiencies. At the same time put more emphasis on utilization of these teaching aids into your certificate level training. Use the visiting scholar concept to bring in someone in this area to help.

4. Semester System - If you can get this, gives you more flexibility to experiment. The argument I heard against it is that it puts too much pressure on teachers. However, by giving students feedback more frequently it reduces the trauma of failure. Students seemed to want it.

5. Establish linkage with International Research Centers - There are now 10, I believe, including IRNR, ICCA, ILRAD, ICARDA, and ICRISAT - all with relevant research information and potential training opportunities for faculty. ICRAF in Nairobi is not a member of the group but is an important center for agro-forestry. Addresses for these organizations should be available from USAID.
6. Get a wide variety of visiting scholars from all around the world - both from developing and developed countries. This creates breadth in your program and will help future programs through the continuing research and publication exchange. Also it creates opportunities for your own faculty development.
7. Don't be in too big of a hurry on a masters program. Develop a sound B.Sc first and get faculty involved in applied research. You will also need to get a critical mass of your own faculty at the Ph.D level. You could bring in some help for M.S. level teaching but I think in the long run you would be ahead to develop your own faculty. Also give greater emphasis to Certificate Level! (see #10)
8. Use every opportunity to take advantage of student's own home experience. Some suggestions:
 - a) Have students make small soil monoliths for their own home farm (or nearby area). These monolith kits are very cheap - Dan Amos could help acquire.
 - b) Have students work with their local panchayat to develop a management plan or find out what is needed to do so.
 - c) Develop a standardized format whereby students can analyze their own farm/household system (or nearby area) in terms of nutrient flows, energy cycles, water cycles, money flows, and information flow.
9. To give greater emphasis on extension techniques, have students develop a short (8 to 12 minute) slide/tape on some conservation practice e.g. terrace maintenance, tree planting, rotation grazing. These materials could then be used in teaching at certificate level and for extension purposes.
10. Not discussed at F Khara, but why the separation of certificate and B.Sc. faculty. IRNR Faculty? should teach at both levels to upgrade the teaching level at certificate level. In some ways, the certificate level training is even more important than B.Sc. at this time in Nepal.

c.c. Charles T. Hash, George F. Taylor, Burt T. Levenson