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

Submitted to:
USAID/Kathmandu
May 25, 1988

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EXECUTIVE SUMMARY

Resource Conservation and Utilization Project

The Resource Conservation and Utilization Project (RCUP) began in 1980 with the design and approval of a 5 year, \$32 million project. The project was extended on an annual basis at the end of the first five years to achieve the objectives outlined in the project paper. The project's purpose has been 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." With multiple objectives and efforts to integrate many activities of 11 line agencies, RCUP focused its efforts on institutional development at the Institute of Forestry and on a range of field activities (including river training, building construction, small-scale irrigation development, gully and landslide rehabilitation, livestock management, and water supply) in two major watersheds, the Daraundi in Gorkha District, and the Kali Gandaki in Mustang and Myagdi Districts.

Final Evaluation of RCUP

Scheduled to end on July 15, 1988, RCUP is being evaluated for a last time. Two earlier evaluations were done, the first in 1983 focussed on the validity of the project as it was originally designed; the second in 1985, a mid-term evaluation, focused on project implementation and resulted in a major shift of the project's resources in a small watershed approach. In this approach project implementors selected small watershed units based on: the seriousness of soil and water conservation problems; a high level of interest by local people, and the condition that RCUP-built facilities would be used.

USAID asked the evaluation team to focus primarily on the last two years of the project, during which this small watershed approach has been implemented. The Scope of Work requested the team to look at field activities in resource management that were considered to be successful, to provide independent confirmation of the successes, to determine the reasons for success or failure, and to provide recommendations on potential replicability of successful activities.

Findings of the Evaluation

In summary, the team found that the small watershed approach has been more successful than the previous RCUP-implemented activities. Over the short term, and potentially the long term, some activities were effectively meeting objectives, were efficiently doing so, and had a reasonable chance of being sustained. For example, some of the elements of success observed were: incorporation of user group demand and input into planning and implementing an activity, flexible institutional approaches to take advantage of existing opportunities; use of appropriate (i.e. low cost, locally available) materials in the design and

construction of infrastructure); local cooperation for long term protection of an area; evidence of visions of a future that included awareness of the need for resource conservation, and more focus on fewer objectives for smaller activities within more limited geographical areas.

Major Recommendations

While the RCUP Final Evaluation Report includes many recommendations, the major ones are that USAID should consider for on-going and future policy dialogue are:

1. USAID should insist that user groups and other more participatory approaches to idea conception and activity initiation, implementation, monitoring and evaluation as conditions for HMG support.

2. USAID and HMG must require that project designers and implementors meet the most critical conditions for sustainability - technical appropriateness, economic efficiency, user group participation, and a bottom up technical assistance strategy.

3. Based on the RCUP experience in natural resource management, USAID should be required to include the following salient features in project design and implementation: modest and well-focused objectives; more focus on panchayat level activities; incentives and assistance to encourage more self-reliant local level natural resource management; flexibility in leveraging existing opportunities where appropriate; execution of activities wherever possible through small local contractors; appropriate monitoring and evaluation of field programs and processes with special focus on the interaction of people and natural resources.

4. To improve the impact of natural resource management activities, HMG must give high priority to protection and management of existing natural forests and grazing lands, with the cooperation of local "people fencing" as a preferred protection method. Additionally, HMG must develop new criteria to guide site selection and choice of design for gully rehabilitation.

5. Realizing that limited funds for soil conservation and watershed management dictate a careful choice of priorities, using gabions for river training and gully control should have the lowest priority because of technical ineffectiveness and economic inefficiency.

6. USAID must insist that HMG, through its IOF Project, the Forestry Development Project, and others, to continue its efforts to enhance the role of women in natural resource management through training of WDOs and paratechnical training for women farmer motivators. Additionally, USAID should monitor the actions of multilateral projects such the Community Forestry

Project with regard to how they promote and support women in resource management activities.

7. USAID must assist HMG in reorienting its delivery of technical assistance from a top down to a bottom-up, more extension oriented approach, that works with local people to develop, manage and maintain their natural resources.

8. USAID must develop new, innovative strategies to implement natural resource projects. USAID should continue to experiment with more flexible and innovative funding mechanisms such as "sinking funds".

9. HMG must give higher priority to in-country training for professionals, especially on participatory approaches, and technical training for technicians, paratechnicals, and local farmers to improve the use of existing resources.

10. No "blue print" for replication of specific activities, technologies, and processes exists, therefore USAID and HMG must carefully investigate the potential for replicating some of the conditions that will ensure the success of activities, technologies, and processes.

RECOMMENDATIONS FOR FUTURE ACTION

Introduction

The recommendations on natural resource management of the RCUP Final Evaluation Report will soon join those that have preceded them. Some of the earlier recommendations have been accepted and adopted; others such as improving budget disbursement procedures have not, while the problems that they addressed persist.

The authors of this report feel that HMG should convene a meeting with all relevant line agencies and interested donors within one year to review the findings and recommendations of this report and others that focus on natural resource management. In preparation for this meeting, HMG should prepare a report that documents and synthesizes the major recurring recommendations which should be addressed at the proposed meeting. The primary objective of this meeting would be to establish a more strategic approach to natural resource management in Nepal. The output of such a meeting would be a plan of action which: provides guidelines on the approach(es) that should be followed, articulates the objectives of the strategy, outlines the activities that should be implemented, indicates policy and programmatic changes that should be instituted, addresses personnel and training needs, and estimates funding requirements to implement the strategy.

Specific Recommendations for HMG, USAID, AND PVOs

This section summarizes the recommendations found in Part II - Findings and Recommendations - of this report. The recommendations from Chapter 3-8 are repeated here by major categories - impacts on improved natural resource management; elements of local participation; potential and sustainability; institutional roles, responsibilities, and relationships; links with USAID biological diversity strategy, and conditions for replicating activities, technologies, and processes; however, they can be reorganized in this section to reflect the specific roles and responsibilities proposed for HMG, USAID, and PVOs as well as priority.

HMG

Impact in Improved Natural Resource Management

High Priority Actions

- o High priority should be given to protect and manage existing natural forests and grazing lands, with the cooperation of local people ("people fencing") as a preferred protection method.
- o DFCs should work closely with the local people in the preparation and implementation of sustained yield forest management plans, especially for wood

and fodder production.

- o New criteria should guide site selection and choice for design for gully rehabilitation. These criteria should include guideline specifying that: a) site selection and planning include an economic analysis; b) alternative methods for gully rehabilitation, including a variety of vegetative and structural combinations, need to be evaluated at the planning stage for each check dam under consideration; c) appropriate materials to be used in the cheapest, technically effective solution; and d) water diversion and protection from grazing at gully sides and headcuts to be mandatory part of rehabilitation.
- o Women Development Officers should receive additional training in natural resource management and should receive additional support in future forestry, soil conservation and watershed management activities.
- o Move as rapidly as possible to turn over as much forest land as possible to local panchayats and provide training for local people in sustained yield management practices.
- o The new Institute of Forestry Project should move forward as rapidly as possible to ensure continued training of natural resource professionals and technicians, especially in participatory practices.

Medium Priority Actions

- o More emphasis in plantation programs should be given to site selection and survival rates of species to meet local needs, rather than merely a required target for planting a certain number of trees.
- o Agricultural areas where production is limited by water scarcity should be identified and the feasibility of small-scale irrigation systems determined.
- o The Institute of Forestry should expand its programs to serve as a base for farmer training and for training of user groups in natural resource management.

Low Priority Actions

- o River training structures should only be used in carefully selected sites where detailed engineering studies clearly indicate technical effectiveness and economic analysis shows that benefits will exceed costs for the least costly alternative.
- o Continue to use temporary local labor to carry out projects in natural resource management.
- o Assign at least one trained Ranger, Naik or nursery work leader to each nursery to provide more regular supervision.
- o Consider alternative uses for those RCUP buildings that are not fully utilized.

Elements of Local Participation

High Priority Action

- o Ensure, at a minimum, that the elements for more local participation are planned for and implemented for future projects and programs.
- o Make more concerted effort to move beyond the rhetoric of decentralization to its actual implementation in the field.
- o Work to ensure the trust of local people by following through on promises.
- o When designing and implementing field activities, HMG should weigh the costs (e.g., time, energy) to local people involved in participation.
- o Continue efforts to ensure that women's participation is supported in all HMG projects.
- o Monitor project activities for their impact on women and modify activities that are having as adverse or little positive impact on women.
- o Use existing studies, reports and evaluations on the status of women in Nepal and in various projects to : determine the lessons learned relative to natural resource management; develop a more strategic approach to addressing the issues raised in these documents; and implement, as appropriate, the recommendations that previously have been made that fit within this strategic approach.

Medium Priority Actions

- o Provide more training to HMG staff, especially at the Ranger level, in how to encourage and facilitate local participation.
- o Develop new performance criteria that evaluate HMG planners, implementators, and managers on how well they obtain and support local participation rather than only on how efficiently and effectively they meet tree planting, construction, fund disbursement, or other targets.
- o In project design, look closely at finding a balance between trade-offs (such as between getting quick results and getting people's participation which is oftentimes a slow process) and monitor these trade-offs through time.

Potential for Sustainability

High Priority Actions

- o Carefully plan activities to include important indicators to sustainability, particularly technical appropriateness, economic efficiency, user group participation, and a bottom-up technical assistance strategy.
- o Phase out project subsidies so that local beneficiaries are responsible for long term management and maintenance.
- o Continue moving in the very positive direction presented by the small watershed approach.
- o Focus future small watershed activities on attainable objectives and simple technical and administrative procedures.
- o Carefully evaluate the potential sustainability of predominantly structural approaches to erosion control, particularly the use of check dams to rehabilitate gullies and landslides and the use of gabions in river training. Vegetative measures and grazing control are, in many situations, lower cost and more effective and sustainable solutions to gully control.
- o Projects should be selected and planned with more emphasis on elements of potential sustainability rather than only on the type of activity.
- o To ensure long term local interest, particularly in volunteer labor and maintenance, HMG should

place more emphasis on economic viability in the form of income generation and increased natural resource productivity.

- o In activities where negative environmental impacts are anticipated, HMG should institute mitigating measures or complementary support activities to reduce or eliminate the impacts.

Institutional Roles, Responsibilities, and Relationships

High Priority Actions

- o Improve HMG funding disbursement mechanisms.
- o Match HMG fiscal rules and regulations with decentralization policy for improved implementation in the field.
- o Give higher priority to technical, paratechnical and in-country professional training in natural resource management.

Medium Priority Actions

- o Strengthen the planning capabilities of LDOs and institutionalize coordination and monitoring systems.
- o Formulate a national level policy for women's involvement (with special emphasis on agricultural and natural resource management activities) and extend services and coverage through networking.
- o Extension efforts should rely on leader farmers and provide more support to poorer and more indigent farmers.
- o Use existing institutions and facilities wherever possible.
- o Use District Panchayats as a medium for direct financing of natural resource management activities.
- o WDS should focus more in areas where SFDP and similar credit programs are run by local banks.

Replicating Conditions for Sustainable Activities, Technologies, and Processes

High Priority Actions

- o Give careful condition to adaptation of activities, technologies, or processes to specific

sites where they are extended or adopted. No blue print for resource management solutions exists which is universally applicable.

Medium Priority Actions

- o Promote the dissemination of information at all levels (local, district, national) about successful activities, technologies, and processes through a variety of mechanisms (e.g., audio-visuals, study tours) that provide details and discussions on the potential range of necessary elements for successful natural resource management.

USAID/Nepal

The team recognizes that USAID programs in Nepal are increasingly based in dwindling resources which require USAID to leverage opportunities and focus more effort on the sustainability of the projects it supports so that the Government of Nepal and its people will have a more self-reliant and sustainable development process. The team also recognizes that the United States has certain comparative advantages that should be the focus of their activities. With these thoughts in mind, the team recommends that USAID generally should provide support to HMG for:

- o Improvement of the functioning of HMG institutions, especially through support to training and institutional development activities through the IOF and Forestry Development Projects.
- o Implementation of some natural resource activities through PVOs and NGOs like CARE/Nepal.
- o More assistance in research and policy analysis on natural resource management.
- o Training local people in natural resource management, through existing projects insofar as possible, with special attention to the role that IOF might play.
- o Women in Development activities in natural resource management and related income generating activities, through all USAID projects that deal with agriculture, rural development, and natural resource management.

The following recommendations for USAID focus on the specific aspects of the RCUP analysis in CHAPTERS 3-8:

Impacts on Improved Natural Resource Management

High Priority Actions

- o Do not finance the construction of any new buildings unless: HMG gives firm commitment to provide adequate staff to use the facilities; the buildings are situated to blend in with the local community; the buildings are constructed using local materials and methods; the buildings are built in safe locations with adequate water supply; and on condition that no other appropriate buildings are available in an area which could be rented from local people.

Elements on Local Participation

High Priority Actions

- o Ensure, at a minimum, that the elements for more local participation are planned for and implemented in future projects and programs.

Medium Priority Actions

- o Develop new performance criteria that evaluate their planners, implementors, and managers on how well they obtain and support local participation rather than only on how efficiently and effectively they meet tree planting, construction, fund disbursement, or other targets.
- o While no "model" can serve in all cases, USAID should undertake a study of user groups in Nepal to identify the range of models and to tap the experiences of USAID, HMG and other donors, PVOs and NGOs.
- o Disseminate the lessons learned from this research activity and develop training material for agencies and individuals working at all levels in natural resource management and rural development in Nepal.

Potential for Sustainability

High Priority Actions

- o Insist that HMG include the conditions for sustainability in project planning, implementation, monitoring and evaluation activities.

Institutional Roles, Responsibilities, and Relationships
High Priority Actions

- o Based on the RCUP experiences, USAID's role in development support in the area of natural resource management should include the following salient features: modest and well-focused objectives; focussed panchayat level support of fundamental changes to encourage more self-reliant local level natural resource management; flexibility in leveraging existing opportunities where appropriate; execution of activities wherever possible through small local contractors; appropriate monitoring and evaluation of field programs and processes with special focus on the interaction of people and natural resources.

Medium Priority Actions

- o Biological Diversity is and should continue to be linked to USAID's initiatives in natural resource management, including the Agricultural Research and Production Project, the Rapti Development Project, the Institute of Forestry Project and the Forestry Development Project.

Private Voluntary Organizations/Non-Governmental Organizations

PVOs and NGOs should be used as one means of donor support. PVOs, like CARE/Nepal, are working effectively and collaboratively with HMG as implementing agencies at the local level. The teams feels that PVO support to development in Nepal can be enhanced by: continuing to recruit more local technicians and personnel; sharing information with field people and user groups; and supporting HMG institution-building through more in-service training of national staff.

CHAPTER 1

INTRODUCTION

History of RCUP

The Resource Conservation and Utilization Project (RCUP) began in 1980 with design and approval of a 5 year, \$32 million project (\$27 million from USAID; \$5 million from HMG). The project was extended on an annual basis for three years in order to achieve the objectives outlined in the Project Paper. The project's goal was to increase agricultural production, improve employment and income generating opportunities and raise nutritional levels of the rural poor of Nepal. More specifically, the project's purpose was 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" (USAID, 1980).

With multiple objectives and efforts to integrate many activities of 11 line agencies, RCUP focused its efforts on institutional development at the Institute of Forestry and on a range of field activities (including river training, small-scale irrigation development, gully and landslide protection, livestock management, building construction, and water supply) in two major watershed areas - the Daraundi in Gorkha District and the Kali Gandaki in Mustang and Myagdi Districts (See Map in Appendix 6).

Scheduled to end on July 15, 1988, RCUP is being evaluated for the last time. USAID commissioned two earlier evaluations - the first in 1983 focused on the validity of the project as it was originally designed; the second in 1985, a mid-term evaluation, focused on project implementation and resulted in a major refocusing of the project's resources in a small watershed approach. In this approach, project implementors selected small watershed units based on: 1) the seriousness of soil and water conservation problems, 2) a high level of interest by local people, and 3) the condition that RCUP-built facilities would be used.

The evaluation team primarily focused on the last two years of the project during which the small watershed approach has been implemented. USAID asked the team to look at field activities in resource management that were considered to be successful, to provide independent confirmation of the successes, to determine the reasons for success or failure, and to provide suggestions on the potential replicability of successful activities.

Scope of Work for the RCUP Evaluation

Specifically, the evaluation team was asked to;

1. Identify and describe successful elements within the RCUP field activities which could reasonably be replicated on a broader scale in comparable hill areas in Nepal. What are the salient impacts of the project

that have contributed or could contribute to improved natural resource management in Nepal?

2. Review the extent to which the small watershed management approach is successful (impact) and define the determining factors or modifications which could make it replicable in other areas in Nepal.
3. Draw the overriding lessons for defining the strategic role of HMG in local level management of resources.
 - a) Base these conclusions, inter alia, on assessment of quality, relevance and adequacy of current HMG support with a special focus on HMG District level inter-disciplinary work and local participation.
 - b) Evaluate the institutional constraints and potential for managing similar types of watersheds in other hill areas. Recommend specific approaches to combining HMG institutional capabilities with donor support or with the support of PVOs. Identify potential roles that Private Volunteer Organizations (PVOs) & Non-Governmental Organizations (NGOs) could play in planning and implementing the natural resource management activities.
 - c) Suggest modifications, if any, in the approach used in the project to monitor and analyze progress in developing more effective approaches to natural resource management.
- 4) What substantive focus for follow-on activities is most appropriate? Is there or should there be a demonstrable link between future initiatives and USAID's biodiversity strategy? (SOW, 1988)

Results of the Evaluation

The detailed findings and recommendations of the evaluation focus on: the impact of the small watershed approach on improved natural resource management; elements of local participation in natural resource management; potential for technical, economic, social and institutional sustainability; institutional issues such as roles, responsibilities, and relations; replicability based on lessons learned; and relevance of any RCUP lessons for USAID's bio-diversity strategy.

In summary, the team found that the small watershed approach has been more successful than the previous RCUP-implemented activities. The team rated 16 out of 30 of the RCUP and small watershed sites visited as highly or moderately successful; nine of those 16 were small watershed activities; 5 of the 7 rated highly successful were small watershed activities.

Some aspects of the approach evaluated are working well. Over the short term, and potentially the long term, some activities are effectively meeting objectives, are efficiently doing so, and have a reasonable chance of being sustained. For example, some of the elements of success observed are: incorporation of user group demand and input into planning and implementing an activity; flexible institutional approaches to take advantage of existing opportunities; use of appropriate (i.e., low cost, locally available materials in the design and construction of infrastructure); local cooperation for long term protection of a degraded area; evidence of visions of a future that included awareness of the need for resource conservation; and more sharply focused objectives on smaller activities within more limited geographical areas.

On the other hand, the team found other aspects that did not seem to be working well. Some examples of these include: top down planning and implementation approaches which do not include local people; imitated technologies that are not appropriate to the context; lack of follow-through in some activities by agencies; lack of assurance of long-term maintenance (either by not training locals to maintain a structure once project support is removed or by not providing some mechanism over the long term to cover recurrent costs for inputs that locals cannot otherwise afford); and a building program which provided temporary employment for locals during the construction phase and facilities for HMG officials but which have incurred a great deal of alienation of local people at many of the sites the team visited.

The following sections discuss the methodology used and outline the lessons learned from this evaluation effort. The appendices including a list of Acronyms in Appendix 4, and provide the details that are referred to in the text. The team numbered all of the recommendations in Part II consecutively for easier reference but recategorized them by institution actions in the section entitled "Recommendations for Future Action".

CHAPTER 2

EVALUATION METHODOLOGY

Introduction

The RCUP Evaluation Team began meeting on April 13, 1988. The team met with USAID/Nepal personnel to clarify and refine the Scope of Work for the evaluation. Two members of the team met with representatives of the USAID staff who deal with Women in Development issues to determine any supplementary data collection needs that might address women's participation in project activities.

During the first week, the team met with a number of department officials of HMG in Kathmandu for an orientation about forestry, environmental, soil conservation and watershed management, and related activities and policies in Nepal. The team also talked to individuals working with the development of Nepal's Master Forestry Plan. The team interviewed over 100 persons during the course of the evaluation. In addition to those named in the List of Contacts (Appendix 3), the team interviewed many local people about fuelwood costs, markets for produce, accessibility to water, and related issues.

At the outset of each of the two major phases of the evaluation - 1) data collection in the field, and 2) analysis and reporting - the team established a systematic methodology to guide its work.

Field Evaluation Phase

Prior to traveling to the field, the team identified indicators for 5 minimum data sets (see Appendix 2). The sets covered the following areas of concern:

- Economic Indicators
- Social Indicators
- Technical Indicators
- Forestry Indicators
- Institutional Indicators

Not every question on these sets was asked at every site; they merely served as guidelines for the questions that team members felt were relevant to evaluate each site.

The team then spent two weeks in the field visiting over 30 RCUP project activity sites, including check dams, plantations, Panchayat and Panchayat Protected Forests, trail improvement activities, small-scale irrigation schemes, and water supply systems, in Mustang and Gorkha Districts (see Table 1). The team also visited some activities in Kaski District, including Phewa

TABLE 1

RCUP SITES AND ACTIVITIES VISITED BY EVALUATION TEAM

DATE	SITE	DISTRICT	ACTIVITY	PROJECT
4/19	JOMOSOM	MUSTANG	BUILDINGS	RCUP
4/19	JOMOSOM	MUSTANG	PLANTATION	RCUP
4/19	THINIGAUN	MUSTANG	WATER SUPPLY	RCUP
4/20	MARPHA FARM	MUSTANG	BLDG/GREEN/TREES	RCUP
4/20	CHHAIRO	MUSTANG	IRRIGATION	WASH*/**
4/21	TUKUCHE	MUSTANG	IRRIGATION	WASH**
4/22	KOBANG	MUSTANG	NURSERY	RCUP
4/22	LARJUNG	MUSTANG	WATER SUPPLY	WASH
4/22	DUNJE	MUSTANG	IRRIGATION	WASH
4/22	KAGBENI	MUSTANG	SOUTH PLANTATION	WASH**
4/23	KAGBENI	MUSTANG	RS4 PLANT	WASH**
4/24	PUTAK	MUSTANG	PLANTATION	WASH
4/26	POKHARA	KASKI	IOF	RCUP
4/27	PHEWA TAL	KASKI	PHEWA TAL	OTHER
4/28	BEGNAS TAL	KASKI	DSCWM/CARE	OTHER
4/28	GORKHA	GORKHA	BUILDINGS	RCUP
4/29	DURBAR	GORKHA	TRAIL IMPROV	RCUP
4/29	DURBAR	GORKHA	PLANTATION	RCUP
4/29	BINDA BASHINI	GORKHA	WATER SUPPLY	RCUP
4/29	BINDA BASHINI	GORKHA	NURSERY	RCUP
4/29	NARESWOR	GORKHA	WDS	WASH**
4/20	CHOPRAK	GORKHA	PLANTATION	RCUP
4/29	CHOPRAK	GORKHA	NURSERY	RCUP
4/30	BHUSUNDI	GORKHA	GABIONS	RCUP
4/30	SIMPANI	GORKHA	TRAIL IMPROV	RCUP
4/30	AMPIPAL	GORKHA	CHECK DAM	WASH
5/1	LEGLIKOT	GORKHA	PLANTATION	WASH
5/1	KHOPLANG	GORKHA	WATER SUPPLY	RCUP
5/1	SIMPALI	GORKHA	CHECK DAM	WASH
5/1	BIJULIDADA	GORKHA	STOCKPOND	WASH
5/1	BIJULIDADA	GORKHA	SUBSTATION	RCUP
5/1	THULIBAN	GORKHA	PPF	WASH
5/1	CHAMBANJHYANG	GORKHA	CHECKDAM	WASH
5/1	KHAR KHOLA	GORKHA	CHECKDAM	RCUP
5/2	GORKHA	GORKHA	CHECKDAM	RCUP
5/2	GORKHA	GORKHA	NURSERY	RCUP
5/2	DHUNGADE	GORKHA	LANDSLIDE	WASH
5/2	KHOLKHOLE	GORKHA	CHECKDAM	RCUP

* WASH = Small Watershed activity under RCUP.

** = These projects were initiated under RCUP, but implemented under the small watershed approach.

Tal, Begnas Tal, and IOF. (Note: Throughout the text, the team differentiates between RCUP and small watershed approach. While both are RCUP, the first refers to the project's first 5 years; the second to the project's last 3 years.)

Team members collected information from a variety of sources. The team conducted interviews with HMG officials (including District Conservation Officers, District Forest Controllers, and other District Officials involved in planning and implementing natural resource management, agriculture and related activities), Panchayat representatives, and local people. Team members also used personal observation in the field and secondary references (e.g. existing forest management plans) as available. The team used these varied sources as the basis for the descriptive and analytical section of this report which is entitled "Findings and Recommendations".

Analysis Phase

Upon returning to Kathmandu to initiate the second major phase of this Evaluation, the team developed an organizational tool (See Evaluation Matrix 1 and Appendix 1 for detailed Footnotes) for evaluating separate project activities and for identifying general lessons learned in a more systematic and comparable way. The purpose of this tool is to look at general trends in major important USAID-related sectors, i.e., technical, economic, social, and institutional. While the rating done is obviously semi-quantitative, it is important to note that, in the long process of placing different values in the Matrix, team members had no major difference of opinion (i.e., no more than 1 point) on the scale used, thus ensuring more objectivity in establishment of the ratings. Additionally, team members agreed in principle, about all the successes and failures that could be generalized from the field visits.

The team did not rate all sites visited in the Evaluation Matrix. The team omitted all RCUP building sites since they had been evaluated previously. However, the team has provided some general observations about the building program in the section on Impacts on Improved Natural Resource Management because they were an oft-mentioned RCUP activity. The team also did not include non-RCUP sites such as the Phewa Tal and Begnas Tal in the Evaluation Matrix. The team has dealt with the Institute of Forestry in a separate Case Study (Appendix 5).

The team arrayed the Evaluation Matrix in order of ranking based on an unweighted summing of points given for the 18 indicators chosen. Definitions of these indicators follow:

Environmental Impacts - considerations of changes in physical environment, water quality, soil erosion, etc.

Soil Loss - more specific consideration of contributions that the project activity might have had to increasing or decreasing soil loss.

Multipurpose - determination of whether the activity meets single or multiple objectives or provides for single or multiple benefits, i.e., a trail might be used to stabilize soil, provide better access to a market, serve recreation needs, etc.

Technical Appropriateness - consideration of whether the activity was designed and implemented in accord with the local context and at a level of complexity that is appropriate to meet technical objectives, i.e., where the activity makes best use of local, low cost resources that are easily built and maintained by local people and that meet the objectives for which the activity was designed to serve.

Technical Effectiveness - consideration of whether the activity served the needs for which it was designed.

Economic Efficiency - a preliminary estimate of whether or not economic benefits are likely to exceed costs. Due to lack of data, this measure is only an indication of whether the benefit/cost ratio appears to be clearly positive or clearly negative.

Employment and Income - consideration of whether the activity provided short or long term opportunities for employment and income; special consideration was given to employment and income benefits for women.

Cost Effectiveness - a measure of how the lowest cost methods were used to achieve specified objectives.

Participatory Approaches

User Group - consideration of whether the activity was user group conceived and initiated; whether the user group contributed voluntary labor; and whether there is long term commitment by the user group to maintain and manage the activity.

Other Group - consideration of whether some other more formal group at the village or district panchayat level played a role in initiating, implementing, and/or maintaining the activity.

Leadership/Catalyst - consideration of whether an individual played a particularly important role in initiating or implementing the activity, e.g., a Woman Development Officer or a Pradhan Panch.

WID - defined as activities that: assisted women to some degree in increasing access to and control over resources, provided income generating potential for women, or particularly addressed women's needs (e.g., drinking water supply).

Extension/Local Training - consideration of whether extension activities at the local level or formal or informal training of local people occurred because of the activity.

Demonstration Effects - activities that have led, or potentially may lead, other villages or user groups to ask for the same type of activity. (No evaluation was made of negative examples that should not be replicated; however, this issue is discussed in the section on "Finding and Recommendations").

Planning - consideration of the nature, level, and effectiveness of planning that went into the activity; whether it was standard HMG practice, included local people, etc.

Technical Assistance Strategy - defined on a range from top down with standard practices and typical bureaucratic rigidity (negative) to more decentralized local development initiated and participatory activities where institutions providing assistance are more flexible and responsive (positive). Note: Scores here reflect whether HMG was being evaluated before decentralization or after; if before then the score of 0 is typically given for being standard practice.

Funding Method/Timeliness - consideration of whether the funding mechanism was standard or unique, whether it was timely, whether it contributed to the success or failure of an activity, whether it made a difference.

Technical/Professional Training - a measure of whether any formal or informal training was received by professional or technical level people during the course of a specific activity.

The scale used in Evaluation Matrix 1 ranges from +3 to -3 representing;

+3	=	outstanding or very significant positive impact
+2	=	some significance to positive impact
+1	=	some, but little positive impact
0	=	virtually no effect, either positive or negative
-1	=	some negative impact

- 2 = reasonably significant negative impact
- 3 = very significant negative impact

The various sub-sections on Impacts, Local Participation, Sustainability, and Institutional Considerations report the results of Matrix 1 in greater detail.

Limitations to the Evaluation

The team noted several problems or limitations encountered during the evaluation process. The team based much of its analysis on what members saw in field. Some project documentation exists (e.g., evaluations, field trip reports), but major portions of volumes of data collected in RCUP project monitoring activities are not available, the files having been retired or burned. While this was a limitation, the team was also advised that this source of data was not in a particularly usable or manageable form. Additionally, the team felt that it was better not to use the traditional method of evaluating project activities. USAID made changes in the project approach during the past two years which would not have been reflected in earlier project document targets.

Another point of concern expressed by the team was the selection of project activity sites to be visited. Because the team did not see all sites, and because time did not permit travel to Myagdi District, the evaluation is somewhat limited in generalizing for the whole area covered by the RCUP small watershed approach of the last two years.

A final point of concern is the lack of time in the field to obtain detailed and reliable information on gender, ethnic, class and related equity issues. While the team made a conscious effort to focus on the role of women as participants and beneficiaries in the project, team members were unable to ascertain much information on the impacts, whether positive, negative, or nonexistent, in project activity areas. Analysis of these issues requires not only time to make observations but also to develop the confidence of key informants to provide more details for each site. However, where the team has been able to make some judgements, these insights appear in this evaluation report.

CHAPTER 3

IMPACTS ON IMPROVED NATURAL RESOURCE MANAGEMENT

Introduction

The RCUP Evaluation Team used an Evaluation Matrix (Methodology chapter) to assist in analyzing the data collected during the visits to 36 RCUP activity sites. The matrix itself includes several indicators of impact that the small watershed component of RCUP has had on natural resource management in Nepal.

Finding: River training by using gabions for bank stabilization in high mountain areas, such as the Kali Gandaki, is not technically effective. While river training is a very popular activity with the local people and a potentially sensitive one since it is a high priority for HMG, the team saw few gabions in Mustang and Gorkha districts that had not been either been partially or totally destroyed by floods within the past year.

Recommendation(s):

1. River training structures should only be used in carefully selected sites where detailed engineering studies clearly indicate technical effectiveness and economic analysis shows that benefits will exceed costs for the least costly alternative. Given budgetary constraints, this is not an appropriate resource management activity.

Finding: Management of existing forest and grazing land, including cost effective protection measures, increases production of wood and fodder while decreasing soil losses. The team witnessed a variety of protection measures, including barbed wire, stone fencing, Department of Forestry guards, and village forest watchers. All of these methods are technically effective, but only with the support of local people. "People fencing" is clearly the cheapest alternative, K. Shrestha, Soil Conservation Officer with the Kulekhani Watershed Project, reports that structural fencing is 75% of plantation costs (personal communication, 1988). The productivity of protected forests visited in all three districts demonstrates the value of placing higher priority on the management and protection of existing forests than on the establishment of new plantations.

In the Phewa Tal catchment, the team observed a protected grassland in which management as a hayfield resulted in a five-fold increase in fodder production and a three-fold decrease in soil loss (Fleming, 1983). The District Forest Controller in Gorkha, in conjunction with the local people, has developed and implemented management plans for Panchayat Protected Forests which balances demands for forest products with long-term sustained yield. The Nepal-Australia Forestry Project has

conducted trials which indicate that a managed forest in Nepal can produce up to seven times as much biomass as an unmanaged one.

Recommendation(s):

2. High priority should be given to the management of existing forests and grazing lands, with the cooperation of local people ("people fencing") as a preferred protection method. Through Panchayat Protected Forests (PPF) and Panchayat Forest (PF) designation, District Forests Controllers should place as much land as possible under the protection of local panchayats as rapidly as possible when an appropriate form of protection and sustained yield management has been agreed on. Individual panchayats may own government forest if they agree to manage it on a sustained yield basis (PPF) and may own scrubland if they agree to a reforestation plan (PF). Also see Recommendation 9.
3. DFCs should work closely with local people in the preparation and implementation of sustained yield management plans especially for wood and fodder production. District Forest Controllers should give high priority to preparing and implementing sustained yield management plans for all natural forests under their control.

Finding: Check dams evaluated were technically inappropriate and economically inefficient in the rehabilitation of gullies. The team found evidence of check dams located for political reasons or bureaucratic expediency rather than for technical reasons. The team also found that a number of checkdams were overbuilt. Too often, such as in Gorkha, either too many dams were built or they were built to a higher technical standard than necessary for a particular gully rehabilitation.

On many sites, loose stone check dams or retaining walls would have been adequate, rather than more expensive gabion structures. Five sites in Gorkha District were found to be economically inefficient, with costs exceeding benefits (see Evaluation Matrix 1 and benefit/cost analysis in the Potential Sustainability chapter).

Recommendation(s):

4. New criteria should guide site selection and choice of design for gully rehabilitation. These criteria should include guidelines specifying that: a) site selection planning include an economic analysis ensuring that the value of the resources protected exceeds costs; b) alternative methods of gully rehabilitation, including a variety of vegetative and structural combinations,

need to be evaluated at the planning stage for each gully rehabilitation under consideration; c) appropriate materials be used in the cheapest, technically effective solution; and d) water diversion and protection from grazing at gully sides and headcuts be a mandatory part of rehabilitation.

Finding: HMG possesses technical expertise in planting trees; most plantations which fail for technical reasons do so because of poor site selection. With the exception of riverine sites at Jomosom and in the Daraundi Valley, which were almost completely destroyed by floods, survival rates for plantations visited were 70-80%. The use of interplanting and local planting techniques, such as at Kagbeni and Putak, further increase plantation success.

Recommendation(s):

5. Site selection for plantations should be made with the goal of growing needed fuelwood, fodder, and fruit trees to full rotation, rather than for meeting a required target for planting a certain number of trees in a district. Riverine sites subject to floods should be avoided.

Finding: Irrigation of rain-fed agricultural land greatly increases cash crop potentials and local food supplies. The use of low cost small-scale irrigation systems in arid and semi-arid areas such as Tukuhe, Dunje and Chhairo can have a significant impact on both the quantity and variety of food grown. These activities will result in greater potential for cash crops and a broader base for the agricultural sector.

Recommendation(s):

6. Both HMG and USAID should continue to identify agricultural areas where production is limited by water scarcity and implement small-scale irrigation systems. Percentages of cost sharing by local user groups should continue to increase, both in capital investment and long term maintenance.

Finding: Forestry and soil conservation activities are a good source of temporary employment for local people. All RCUP activities visited by the team utilized local labor on a temporary basis. Although this poses a problem during peak agricultural periods, it is a welcome source of income for local people of both genders.

Recommendation(s):

7. HMG should continue to use local temporary labor to carry out projects in natural resource management.

Finding: Women Development Officers play a major role in the success of women's involvement in natural resource activities. In both Mustang (Kagbeni) and Gorkha (Nareswor), the Women Development Officer is a pivotal figure in the successful integration of women in natural resource activities. Without these individuals, plantations and cottage industries would not have been initiated by the local women.

Recommendation(s):

8. Women Development Officers should receive additional training in natural resource management and should be used as a channel by HMG and USAID to fund some of the future activities in forestry and soil and water conservation. A short training course at the IOF to help WDOs identify the scope, role and availability of line agency technical assistance in conservation activities would be appropriate.

Finding: Both Panchayat Forests and Panchayat Protected Forests exist and work well. In more remote areas, such as Putak in Mustang District, the local people are not familiar with the Ministry of Forests and Soil Conservation in general, nor the legalities of establishing a Panchayat Forest. In Gorkha, the team visited several PFs and PPFs that were well managed and had the full support of the local people. The DFC for Gorkha district (N.R. Baral) has developed sustained yield management plans for six PPFs and one PF (a total of 322 ha) and has made formal agreements with several panchayats for long term local management. The DFC has encouraged local awareness of the need for sustained yield management in at least five panchayats in the district.

Recommendation(s):

9. HMG should continue to move as rapidly as possible to turn over as much forest land as possible to local panchayats. Before doing so, HMG should provide further training for local people in sustained yield management.

Finding: One nursery is moving toward local panchayat management, while two others are managed with a top-down technical assistance strategy and no user group participation. HMG has the technical expertise to manage nurseries and produce excellent stock. The nursery at Binda Bashini is a positive example of moving toward panchayat management and maintenance. However, the nursery at Kobang was poorly managed, with no ranger stationed there for six months and no indication of one arriving in the near future. No user group participation was evident at the Kobang and Choprak nurseries.

Recommendation(s):

10. HMG should assign at least one trained ranger,

naike or nursery work leader to each nursery to provide more regular supervision. HMG should also expand the number of nurseries, train local people to manage them, turn them over to local panchayats and serve as a major purchaser of seedlings.

Finding: Many RCUP buildings are under-used or unused. The buildings have caused much local resentment. Many of the RCUP buildings were built to a larger scale and in a style incongruous with the local setting. Others were built in locations without adequate water or in places where HMG officials refused to live for fear of isolation or rising rivers. At several sites, the lack of adequate schools discourages families from joining HMG personnel. Few families were found living with HMG staff in Mustang and Gorkha Districts. In Jomosom, the office buildings are better integrated with existing government offices, are fully utilized, and have been accepted by the local people as a good addition to the local infrastructure. These structures are having a positive indirect impact on natural resource management in the district. At the same time, the residential quarters built by RCUP in Jomosom are set off by themselves, a great distance from either Old Jomosom or the newer residential area near the airport. This separates the government officials from their colleagues in other departments and from the local people.

Recommendation(s):

11. HMG and USAID should consider alternative uses for those RCUP buildings that are not fully utilized. Some possible uses include farmer training centers, ilaka or service centers, district or panchayat conference centers.
12. USAID should not finance the construction of any new buildings unless:
 - a) HMG provides a firm commitment for adequate staffing;
 - b) the buildings are situated and built in harmony with the local community;
 - c) the buildings are built using local materials and methods;
 - d) the buildings are built in safe locations with adequate water supply; and
 - e) no other appropriate buildings are available in the community which could be rented from local people.

Finding: Technical and professional training under the RCUP has resulted in a significant improvement in the management of Nepal's natural resources. Fully half of the faculty at the Institute of Forestry (see IOF case study, Appendix 5) and dozens of others received advanced degree training abroad. Hundreds received technical training here in Nepal. The IOF has evolved into a separate USAID project to start late in 1988.

Recommendation(s):

13. The new Institute of Forestry Project should move forward as rapidly as possible to ensure continued training (with increasing emphasis on more participatory practices) of natural resource professionals, technicians, and paratechnicals.
14. The Institute of Forestry also should be used as base for farmer training and user groups in natural resource management.

CHAPTER 4

ELEMENTS OF LOCAL PARTICIPATION

Introduction

The evaluation team defined local participation as having three major elements:

- o involvement of local people, principally the beneficiaries, in activity conception, initiation, design, implementation, management and decision making;
- o individual and/or community contribution (particularly in the form of voluntary labor) to the activity and sharing in benefits;
- o continued involvement in management and maintenance over the long term.

Finding: Local participation is a critical ingredient to the overall success and sustainability of project activities.

The team rated 16 activities as highly and moderately successful (see Evaluation Matrix 1). The team considered nine of these to have very significant levels of participation. One of these nine successful activities was funded under the original RCUP, while eight were funded under RCUP'S more recent small watershed approach. The team rated the two project sites with a major focus on women, Nareswor and Kagbeni, as highly participatory. The one original RCUP activity in the group that the team rated high on participation was the Binda Bashini nursery. It received its rating, not because the idea of the nursery was initiated by a local group but because of the current participation of local people in managing the nursery and because of the efforts of locals to prepare themselves to assume responsibility for it as a Panchayat nursery in the near future. Four of the other seven project activities (two small watershed and two from the old RCUP) that the team rated as highly or moderately successful had some level of participation. In one very successful RCUP project activity, the Marpha Farm, the leadership of one individual rather than local participation was the major force behind the developments that made it successful. None of the activities rated as unsuccessful by the team, whether under the old RCUP or under the newer small watershed approach, had appreciable amounts of local participation.

Recommendation(s):

15. USAID and HMG should ensure, at a minimum, that conditions for participation are planned for and implemented in future projects and programs.
16. HMG should continue to make concerted efforts to

move beyond the rhetoric of decentralization to its actual implementation in the field. This will require, over the long term, the development of a more effective extension service. Over the short term, this will involve a re-orientation of HMG's field technical assistance program from one that implements projects to one that facilitates and supports the process of people undertaking and maintaining their own development activities in natural resource management.

17. HMG should provide more training of the staff, especially at the Ranger level, in how to encourage and facilitate local participation.
18. USAID and HMG should develop new performance criteria that evaluate their planners, implementors, and managers on how well they obtain and support participation rather than only on how efficiently and effectively they meet tree planting, construction, fund disbursement or other targets.
19. USAID and HMG should continue to work to ensure the trust of local people by following through on promises. This can be done by carefully monitoring the contributions of all concerned and ensuring the timely delivery of promised materials and technical assistance to activity sites.
20. When designing and implementing field activities, USAID and HMG should weigh the costs (e.g., time, energy) to local people involved in participation. These must be weighed against its benefits. USAID and HMG should be constantly aware that there is a range of government agencies and project personnel in many areas requesting people's participation on health, sanitation, agricultural production, resource conservation and other activities. Competition for people's time and energy may become a confusing element within a community (G. Upadhyaya, 1988). Therefore, agencies and project personnel should work to coordinate their efforts to better ensure that people's needs are met, not just a project's targets. Radical change can also be disruptive and confusing, and therefore should be avoided or mitigated.
21. USAID and HMG should look closely during project design to find a balance between trade-offs (such as between getting quick results and getting people's participation which is oftentimes a slower process with more permanent results), and should monitor these trade-offs through time, and

respond to them flexibly in order to ensure sustainable practices.

Finding: No generalizable form of local participation exists; each situation provides a different context and potential for local participation. However, it is important to "capture" the lessons learned from existing experience in order to enhance future efforts to encourage and facilitate local participation.

The evaluation team found a wide range of forms of participation. At the Thinigaun water protection site, no locals participated in the top down process used by project implementors to protect the water supply or to continue protection measures over time; however, local people participated in the benefits of the activity. In the Dunje irrigation activity, a local user group originated the idea, provided volunteer labor and will be involved over the long term in management of the system. In the Simpali check dam activity, one individual (an absentee landowner) originated the idea and appeared to be the major beneficiary even though he did not participate in the implementation of the check dam. In the Chhairo irrigation activity, the idea originated with the Tibetan refugees, which as a user group contributed 10 percent of the total cost of the activity through volunteer labor (e.g., 25 percent of the Chhairo's inhabitants shoveled dirt) and participated in the benefits.

The team observed several positive examples of where technical advisers promoted local participation with some success. In Gorkha District, Gopal Upadhyaya (DSCWM) convened a Panchayat meeting in Ampipal Bazaar in September 1986 to discuss people's roles and participation in various project activities. A number of the 110 participants at the meeting formed user groups which presented proposals to DSCWM for a range of activities (e.g., water source protection, catchment pond construction) with budgets under Rs 25,000. DSCWM evaluated the technical feasibility of the proposals and awarded contracts for construction works. Locals provided much of the labor and participated in planning, site selection, problem-solving with DSCWM, and supervision.

Another positive example comes from HMG/CARE Project in the Begnas area of Kaski District. A year long planning process preceded project implementation. During this period, HMG/CARE informed local Panchayats about the range of potential activities. The Panchayats held a planning committee meeting to decide on projects to be proposed. HMG/CARE sent out technicians to evaluate the feasibility of these proposals and report back to the Panchayats. Together, the Panchayats and HMG/CARE developed a final list which went to the District Assembly. The implementation phase includes the following. Local user groups form and HMG/CARE works with a committee established by the user group. They develop a cost sharing arrangement and sign an

agreement. The committee then supervises execution of the activities. HMG/CARE pays for activities on an incremental payment basis.

The team noted a wide range of participatory forms:

- o sizes (from 4 to a number of families or even wards) of the participating group;
- o composition of the group (e.g., all women, all men, a combination of men and women);
- o objectives (e.g., water supply, irrigation, gully rehabilitation);
- o levels of formality (e.g., some groups had made official agreements with HMG to undertake and maintain certain activities);
- o financial mechanism involved (e.g., in Tukucho, a "sinking fund" is available to cover the recurrent costs of repairing the irrigation system over time; in Kagbeni, access and control over trees encouraged people to pay Rs 4 per tree to the Panchayat for renting the land on which they planted their trees);
- o fundamental causes for participating (e.g., "push factors" including scarcity of fuelwood and fodder may have encouraged the group to participate in plantation activities; "pull factors" including generation of profits may have encouraged the group to participate in an irrigation project);
- o forms of volunteer labor (e.g., in many cases, volunteer labor went directly into the project; in other cases, the labor was volunteered to the panchayat which received payment for the labor and then spent the money on social services or other Panchayat activities such as a party; in the Tukucho case, the volunteer labor was correlated with the benefits so that those individuals with more ropanis of land that would be affected by the irrigation activity were required to provide more labor in building the system).

Recommendation(s):

22. While no "model" can serve in all cases, USAID should undertake a study of user groups in Nepal to identify the range of models and to tap the experiences of HMG, USAID, other donors, PVOS, and NGOs. This kind of information was requested by those working in the field, and the team feels that information from this kind of research would enhance the ability of HMG and others in implementing Nepal's decentralization policies in

the field. Some existing literature (Messerschmidt, 1983, Fisher and Malla, 1987, Molnar, 1981, etc.) already exists which should be the starting point for this effort.

23. USAID and HMG should disseminate the lessons learned from this research activity and should develop training materials for agencies and individuals working at all levels in natural resource management and rural development.
24. IOF should play a stronger role in training professional and technical people about approaches to local participation. The arrival of a new social forestry professor at IOF and the development of curriculum that addresses very complex social issues provides this opportunity (See IOF Case Study Appendix 5).

Finding: A varying degree of positive impact on women resulted from many of the project activities seen by the team. However, with only a few exceptions (e.g., the credit activity in Nareswor), no major change occurred in women's control over resources.

The team saw women participating in activities that provided them with more income through increased resource productivity such as trees in a plantation or water in a water supply scheme. The team observed the possibility of some limited changes in workload because of access to these resources. However, the team noted little evidence that these women had real control over the resources to which they might have had access. Clearly, there were exceptions such as the woman who bought goats (in the Nareswor WID activity) and probably the women in more egalitarian Thakali groups.

A fundamental issue of equity is involved; how to ensure more access to, and control over, resources to women (who contribute 67% of the time invested in farm enterprises in Nepal (Cooper and Skinner, 1983) and who make major contributions to the rural economic base) as well as to other groups such as those of lower castes, the elderly, and children who are often the poorest and most vulnerable members of society.

Recommendation(s):

25. USAID and HMG should continue their effort to ensure that women's participation is supported in agency projects. This will include, but is not limited to, working to remove top down approaches to WID activities in WDS through more streamlined and facilitative planning and activity approval processes; more support to women role models in the bureaucracy especially to those who are currently being trained at IOF; and dissemination

of more information on resource management to women through extension programs. All of these actions will enhance the level and quality of women's participation.

26. USAID and HMG should monitor project activities for their impact on women and should modify activities that are having an adverse or little positive impact on women. Pressing need exists for rapid monitoring and evaluation techniques to be used in the field for user-oriented projects, particularly those which involve women.
27. USAID and HMG should use existing studies, evaluations, and reports (Davenport and others, 1986; Hoskins, 1982; Cooper and Davidson, 1983) on the status of women in Nepal and in various projects to a) determine the lessons learned relative to natural resource management; b) develop a more strategic approach to addressing the issues raised in these documents; and c) implement, as appropriate, the recommendations that previously have been made that fit within this strategic approach.

CHAPTER 5

POTENTIAL FOR SUSTAINABILITY

Introduction

Sustainability is a function of technical, economic social and institutional factors. Natural resource activities are potentially sustainable if they result in the long term viability of the physical resource, the activity, and the user group which maintains the activity. The physical resource is considered sustainable if a desired level of productivity can be maintained on a sustained yield basis into the indefinite future. An activity is more likely to be sustainable if the user group or beneficiary has the necessary knowledge, access to needed inputs, and incentive for long term maintenance.

Methodology

The team chose four indicators of potential sustainability from the list described in Evaluation Matrix 1: (1) appropriateness (a technical indicator); (2) economic efficiency; (3) user group participation (a social indicator); and (4) technical assistance strategy (an institutional indicator). Within the four major categories (technical, economic, social and institutional), the team considered these four indicators to best describe positive trends for potential sustainability of natural resource development activities.

The first indicator, technical appropriateness, considers whether the activity was designed and implemented to make the optimum use of local, low cost resources so that repair and maintenance can be effected by local people. The plantation at Putak is a good example of technical appropriateness because the user group used local cuttings for planting, made stone fences from local materials and developed their own management system for simple irrigation.

The second indicator, economic efficiency (benefit/cost ratio), is a preliminary estimate of whether or not benefits exceed costs, or whether in the long term the activity is economically worth pursuing. The team does not intend for the estimates to be formal calculations of returns on activities, but rather as indicators of whether the economic benefit/cost ratio appears to be clearly positive or clearly negative. Given that caveat, some details of calculations for individual activities, however approximate, are presented in the following section so that the reader is aware of the logic underlying the estimates appearing in Evaluation Matrix 1. Unless sources are specifically cited, data come from interviews in the Mustang and Gorkha areas. For three types of activities (check dams, small-scale irrigation systems and forest plantations), this report

estimates benefits and costs using a simplified method. Rather than calculate a complicated time stream of benefits over the life of an activity, a present value approximation of benefits into the indefinite future is made by dividing the estimated annual benefits by an assumed average future discount rate (10%). This is equivalent to saying that in order to ensure an average annual return of Rs 1,000 at a 10% discount rate into the indefinite future, Rs 10,000 is currently needed for the investment (i.e. present value).

The third indicator, user group participation, considers whether a user group initiated the activity and contributed voluntary labor in construction of the activity and whether the group has a long term commitment to maintain the activity. A positive example is the Tukuche irrigation project in which the user group requested the activity, contributed voluntary labor equivalent to at least five percent of the total cost and arranged (at the suggestion of USAID) a formal and unique maintenance "sinking fund" allowing for coverage of yearly recurrent costs and complete replacement of the system after 23 years.

The fourth indicator, technical assistance strategy, refers to whether assistance from HMG or another institution dealt directly with a user group in a flexible, bottom-up, participatory approach with emphasis on training locals in how to maintain an activity and using technologies compatible with local skills and materials. The team gave a low rating to activities which emphasized a "top down" approach involving little or no user group participation in idea formulation, construction and coverage of potential recurrent costs. Five check dam activities to rehabilitate gullies all received low marks because locals were not trained in check dam maintenance or in grazing control to protect the sides and headcut areas. Positive examples of "bottom up" approaches are Women in Development activities in Nareswor and Kagbeni where WDOs worked directly with user groups to establish small businesses, plantations, and other activities.

Rapid Field Appraisal of Economic Benefits and Costs

Table 3 indicates that the three irrigation activities are clearly positive in terms of economic efficiency. Information from Marpha Farm (Pasang Sherpa, personal communication, 1988) indicates that irrigation would increase agricultural production from 1.5 to 2 times present production. In Dunje the team found that local income could be increased with irrigation from Rs 2,000 to Rs 3,000/ropani/year, resulting in an increase of Rs 1,000/ropani/year).

The team found the check dam activities are not economically efficient, with the possible exception of the Dhungade landslide rehabilitation activity in which benefits may turn out to be more

equal to the costs. In this case, the local user group protects part of the landslide from grazing, has planted part of the landslide with trees and grasses, and plans to divert drainage from the top and sides.

This report estimates the benefits of check dam activities in terms of the value of the agricultural land saved from gully enlargement. The area of land potentially saved by a check dam activity is difficult to estimate in a brief field survey and must be made on the basis of professional judgement and experience; it is a prediction of how much the gully would have enlarged without the check dams.

If the net annual production value from a ropani of land in the Gorkha area is RS 1,000 (field information), the economic present value of the land is Rs 10,000 per ropani, about the current selling price. Therefore, for each Rs 10,000 spent for a check dam activity, one ropani of land must be saved from complete loss by gully enlargement. For the five activities costing Rs 60,000 and less, it is probable that not more than one or two ropanis of land were saved from complete loss. This conclusion is reinforced by the fact that none of the activities included a component of grazing control, which means that the sides and headcut areas of the gullies still remain vulnerable to slumping and piping from high intensity, short duration monsoon rains. Therefore, the team gave these five activities negative ratings under the economic efficiency criterion in Evaluation Matrix 1.

A related but separate economic issue is one of cost effectiveness, or whether there are cheaper solutions for gully and landslide rehabilitation. While there is nearly universal agreement on the issue of revegetation as the ultimate solution to rehabilitation, case by case decisions must be made on particular least cost solutions. In all the check dam sites visited, the team felt that other cheaper solutions would probably be at least as technically effective. In some instances, the team felt that simple but carefully constructed retaining walls without gabions would have protected trails which cross gullies. In other situations, smaller loose stone dams would have sufficed. In still other gullies, grazing protection on gully sides and headcuts would have been effective. In all instances, grazing control of gully sides and headcuts is a mandatory part of rehabilitation.

The team visited six plantations and estimated all except the Jomosom site to be economically efficient. This plantation is located on a high risk flood plain where yearly spring and summer runoff had destroyed most of the trees. In addition, local people do not place high priority on a fuelwood plantation in this area since they have access to extensive natural forests within an hour or less from most villages.

TABLE 3

RAPID FIELD APPRAISAL OF ECONOMIC BENEFITS AND COSTS

Activity	Costs (Rs)	Annual Benefits (Rs)	Present value of Benefits (Rs) at 10% Discount Rate	Estimated Benefit/Cost Ratio
Irrigation				
Dunje	150,000	200,000	2,000,000	13:1
Tukuche	4,000,000	3,000,000	30,000,000	8:1
Chhairo	80,000	200,000	2,000,000	24:1
Check Dams				
Dhungade	82,000	8,000*	80,000	1:1
Kholkhole	60,000	3,000*	30,000	0.5:1
Khar Khola	50,000	1,000*	10,000	0.2:1
Cham- bhanjyang	38,000	2,000*	20,000	0.5:1
Ampipal	31,000	2,000*	20,000	0.6:1
Simpali	30,000	1,000*	10,000	0.3:1
Forest Plantation				
Putak	225,000	700,000	7,000,000	28:1
Leglikot	10,000	4,000	40,000	4:1
Choprak	30,000	12,000	120,000	4:1
Managed Forest				
Thuliban	15,000	15,000	150,000	10:1

* Annual benefits calculated on the basis of Rs 1,000 for each ropani of land either completely rehabilitated or saved from gully advancement (e.g. Rs. 8,000 saves 8 ropanis).

In Putak, where a high demand for fuelwood exists, local people planted a five ha plantation with willow and poplar at a cost of Rs 142,000 for an irrigation system supplied by USAID. The 18 family user group supplied an additional Rs 83,000 worth of cuttings, fencing and watchman costs. The 12,500 trees can be copiced every five to seven years for a value of Rs 400/tree, resulting in annual benefits of Rs 700,000/year. In addition, the villagers harvested about 270 kg of grass from the protected and irrigated plantation last year, resulting in additional annual benefits of Rs 2,700.

Plantations in Gorkha District, such as the ones at Leglikot and Choprak, cost about Rs 2,700/ha to establish, with additional annual costs of about Rs 500/ha for watchmen and maintenance (Nepal-Australian Forestry Project, 1986). A conservative (low) estimate of annual plantation benefits from the Middle Hills is Rs 1,300/ha (Fleming, 1983, cited in Gregerson et al 1987). This estimate is based on annual valuations for fuelwood of Rs 960/ha, for fertilizer of Rs 44/ha and for milk of Rs 300/ha (see Fleming, 1983 for calculation details).

Managed forests, such as the Thuliban PPF, are more productive than either plantations or unmanaged forests. The Nepal-Australia Forestry Project reports that productivity from managed forest plots is four to seven times that from unmanaged plots (personal communication, W. Jackson, Kathmandu, 1988). In the Middle Hill area of the Phewa Tal catchment, Fleming (1983) reported that managed forest products are worth about Rs 2,600/ha/year, while plantations produce only about half that value (Rs 1,300/ha/year).

The following matrix summarizes the results of Evaluation Matrix 1 with a focus on the potential for sustainability. As a subset of Evaluation Matrix 1, this matrix is reordered to reflect the four sustainability indicators. The rating scale is the same +3 to -3 system described in the Methodology Chapter. The results are somewhat arbitrarily divided into four groups: high activities (considered to have a high potential for sustainability); medium (medium potential for sustainability); low (lower potential for sustainability); and marginal (little or no likelihood for long term sustainability).

Finding: Activities with high potential for sustainability have strong positive elements of the four indicators of long term sustainability. Conversely, those activities considered to have little likelihood for sustainability have few or none of the desirable technical, economic, social or institutional attributes necessary for potential long term sustainability. The team gave the Tukuche irrigation activity the highest rating, with marks of 2 and 3 in all four sustainability categories. However, the team rated Larjung Water Supply activity lowest because it had zero or negative elements in all the sustainability indicators. One activity rated "medium" had no user group participation (Marpha

TABLE 4

EVALUATION MATRIX 2:
POTENTIAL FOR SUSTAINABILITY

Site/Activity	Technical Approp- riateness	Economic Efficiency	Social Participa- tory User Groups	Institu- tional Technical Assistance Strategy	Total
HIGH					
Tukuche irrigation*	3	2	3	2	10
Kagbeni plantation*	2	2	3	2	9
Putak plantation*	3	2	2	2	9
Nareswor WDS*	3	1	2	2	8
Gorkha Durbar trail	3	2	1	1	7
Thuliban forest*	3	2	1	1	7
Dunje irrigation*	2	1	2	2	7
MEDIUM					
Marpha Farm	2	2	0	2	6
Binda Bashini nursery	2	1	2	1	6
Chhairo irrigation*	0	2	2	2	6
Bijulidada stock pond*	2	1	2	1	6
Leglikot plantation*	1	1	2	1	5
B. Bashini water protec.	2	1	1	1	5
LOW					
Gorkha Durbar plantation	2	2	0	0	4
Simpani trail improvement	1	1	1	0	3
Choprak nursery	1	1	1	1	2
Dhungade landslide*	1	0	1	0	2
Khoplang water supply	1	1	0	0	2
Gorkha nursery	1	1	0	0	2
Choprak plantation	1	0	0	0	1
Kobang nursery	1	1	0	-1	1
MARGINAL					
Kholkhole check dam	-1	1	0	0	0
Thinigaun water protection	0	-1	0	0	-1
Bhusundi river gabions	0	-1	0	-1	-2
Khar Khola check dam	-1	-1	0	0	-2
Simpali check dam*	-1	-1	0	0	-2
Chambanjhyang check dam*	-1	-1	0	-1	-3
Ampipal check dam*	-1	-1	0	-1	-3
Jomosom plantation	-1	-1	0	-1	-3
Larjung water supply*	-1	-2	0	-1	-4

* Indicates small watershed activity; all others are RCUP earlier activities.

Farm), but the presence of Pasang Sherpa as a leader/catalyst makes the potential for future user group participation high.

Recommendation(s):

28. USAID and HMG should carefully plan activities to include important indicators of sustainability, in particular technical appropriateness, economic efficiency, user group participation and a bottom-up technical assistance strategy. If user group participation is absent, implementing agencies should ensure that other factors compensate to maintain long term local interest and support.
29. HMG and USAID should phase out project subsidies so that local beneficiaries are responsible for long term management and maintenance.

Finding: Ninety percent of the activities with "high potential for sustainability" are small watershed rather than earlier RCUP activities. This finding reflects the small watershed approach emphasis on (a) elements of potential sustainability and (b) attainable objectives and simple technical and administrative procedures.

Recommendation(s):

30. The small watershed program emphasis on elements of potential sustainability is moving in a very positive direction and should be continued.
31. The small watershed emphasis on attainable objectives in small areas and simple technical and administrative procedures has produced positive results and should be continued.

Finding: Activities with marginal potential for sustainability are divided nearly equally between the small watershed and earlier RCUP programs. Under the small watershed programme, HMG initiated several check dam activities for gully control and landslide rehabilitation which have no potential for long term sustainability.

Recommendation(s):

32. The small watershed approach, while conceptually very positive, needs to carefully evaluate the potential sustainability of predominantly structural approaches to erosion control, particularly the use of check dams to rehabilitate gullies and landslides and the use of gabions in river training. Vegetative measures and grazing control are, in many situations, lower cost and more effective and sustainable solutions to gully control.

Finding: Project type is not a reliable indicator for the prediction of long term potential sustainability. Plantations were rated high (Kagbeni and Putak), but also low (Choprak and Jomosom). The team rated trail maintenance activities high (Durbar Palace at Gorkha) and also low (Simpani). Team members gave domestic water source protection activities medium ratings (e.g. Binda Bashini) and also low (Thinigaun). Although the team gave most check dam/gully rehabilitation activities low ratings, it rated the Dhungade landslide rehabilitation somewhat higher because of its technical appropriateness and user group participation in revegetation and grazing control. (Note: The team rated all three irrigation projects high because they include a balanced array of strong potential sustainability indicators.)

Recommendation(s):

33. Projects should be selected and planned with more emphasis on elements of potential sustainability rather than on the type of activity.

Finding: Projects that are economically viable in the long term and contain elements for income generation and increased natural resource productivity have strong user group interest, volunteer labor commitment and potential for user group maintenance. The Tukuhe irrigation activity is an example where the prospect of substantially higher productivity from irrigated terraces has ensured user group initiative, volunteer labor and a fund to guarantee long term maintenance and replacement. The Putak plantation is another example in which the prospect of wood and fodder production from previously unproductive land encouraged the formation of a user group with substantial volunteer labor for construction and maintenance.

Recommendation(s):

34. To ensure long term local interest, particularly in volunteer labor and maintenance, USAID and HMG should place more emphasis on economic viability in the form of income generation and increased natural resource productivity.

Finding: Not all income generating and increased natural resource productivity activities are environmentally sustainable. Part of the WDS activity in Nareswor included help in obtaining loans to increase the size and quality of a goat herd. While clearly a financially viable activity (one woman had already repaid a first loan and had obtained a second), there could be environmentally damaging impacts on grazing land in an area which already has serious sheet erosion. However, the team found evidence of measures to mitigate the potential increase in soil loss, including the entrepreneur's awareness of the erosion problem; avoidance of protected areas when she grazed her goats, and a clear understanding that protected grasslands (hayfields) produced more fodder per hectare than communal grazing pastures. She said that "we must look to tomorrow and the day after tomorrow."

Recommendation(s):

35. In activities where negative environmental impacts are anticipated, USAID and HMG should institute mitigating measures or complementary support activities to reduce or eliminate the impacts. For example, with activities that encourage grazing or include increased fodder needs, there should be complementary components aimed at grazing control, protection of overgrazed land, and encouragement of stall feeding.

CHAPTER 6

INSTITUTIONAL ROLES, RESPONSIBILITIES AND RELATIONSHIPS

Introduction

The team analyzed institutional issues related to the following:

- Planning and implementation
- Technical assistance strategy
- Funding methods and timeliness
- Technical and professional training, and
- Related policies

(See Methodology Chapter for definitions of institutional indicators).

Finding: Institutional performance in planning and implementation was variable in RCUP field activities.

For the planning indicator in Matrix 1, the team rated Marpha Farm, Tukuche irrigation scheme, Dunje irrigation scheme, Gorkha Durbar Trail Improvement, and Gorkha Durbar Plantation highest. The team gave lowest ratings for planning activities such as the river bank plantation near Jomosom, Kobang Nursery and the overbuilt check dams.

From the highly rated sites, the team found that planning of directly funded projects (e.g., Tukuche and Dunje) appeared satisfactory, and that HMG planning capability at the district level is equally good in some of the projects.

Recommendation(s):

36. Based on the RCUP experience, USAID's role in development support in Nepal in the area of natural resource management should have the following salient features:
- o modest and attainable project activities;
 - o more focus on panchayat level activities;
 - o a fundamental change to self-reliant and sustaining processes in natural resource management;
 - o well focused operational objectives;
 - o flexibility to leverage existing or new opportunities;
 - o mechanism to work through small local contractors; and
 - o proper monitoring and evaluation of field

programs and processes that are built-in during the planning stage and involve consideration of, and responsiveness to, interactions between people and natural resources.

Finding: HMG's decentralization policy recognizes the role of the LDO, but the LDOs lack support and resources for planning, coordination and monitoring. The decentralization concept recognizes the local development officer (LDO) as the development coordinator in the district. However, lack of planning support to the LDO has been detrimental to real improvement in district development planning and implementation.

Although good personal relations and personal initiatives to coordinate have proved to be a move in the right direction in small watershed management in one district, lack of a viable formal institutional arrangement has left neighbouring line agencies to drift away from each other in program integration. Conceptually, Decentralization provides for formal coordination, but in reality a lack of support for planning, coordination and monitoring support to LDOs at the district level limits implementation of improved natural resource management activities.

The team observed a lack of proper monitoring of activities at most of the sites visited. For example, in some failed plantation sites, it took HMG officials several years to change their practice of distributing seedlings to one of providing full cuttings and irrigation which were requested by local people and served local conditions better.

Recommendation(s):

37. HMG should strengthen the planning capabilities of LDOs and institutionalize coordination and monitoring. The problem of poor planning and lack of monitoring could be solved by secondment of a conservationist and support staff at district panchayats for planning, coordination and monitoring functions. Those new units should concentrate mainly on: Rapid Rural Appraisal (District profile) preparation and updating; coordination meetings; and monitoring the approaches and processes that involve human and natural resource interactions.

Finding: Lack of policy guidelines in programming in the Women Development Section (WDS) activities undermines effective program formulation and implementation.

In general, confusion exists in the WDS program planning. Program priorities are not set. Lack of program policy guidelines at WDS in Kathmandu has undermined effective program

formulation in the field. Programs proposed by WDOs based on local needs are sometimes changed at the center. The team found this general confusion in Kagbeni where national guidelines appeared to conflict with soil conservation priorities in the field.

Recommendation(s):

38. Formulate national level policy for women's involvement and extend services and coverage by networking functions. The Women Development Section should prepare a national-level policy that defines the scope of its program in various geographical regions of the country and clearly articulates the linkages between natural resource management and income generation. In order to reach a greater number of women, WDS should emphasize: networking with other agencies in each district; extending programs to more panchayats, and training local women as program motivators and local extension workers.

Finding: Commercial banks which administer the PCRW program and the WDOs who are committed to the development of women's activities in the districts have no formal position in any plan formulation committees under decentralization.

Recommendation(s):

39. WDOs and managers of commercial banks involved in administering PCRW in the districts should be included in plan formulation committees for district development planning.

Finding: A technical assistance strategy that made flexible and responsive to local need and inputs was more successful and sustainable than the traditional top-down strategy.

The team rated Marpha Farm, Chhairo irrigation scheme, Tuckuche irrigation scheme, Nareswor WDS activities and Putak plantation high under the Technical Assistance Strategy indicator. The team felt that locally requested activities were more successful when line agencies were more responsive and flexible. Where HMG line agencies programmes were conceived under decentralization policy they received a higher rating. On the other hand, the team rated line agency initiated and implemented activities lower.

Where informal local interest groups were found to be protecting and managing natural forests in some areas, preliminary work done by the DFCs to support more effective management of the natural forests possessed significant potential for increasing productivity and meeting local demand. The team found that this supportive and complementary role of DFC is an appropriate technical assistance strategy.

Early RCUP attempts to build up new institutions such as Catchment Conservation Committees and the Resource Conservation Fund as instruments for people's participation did not prove to be effective. Representatives of committees at the district level and subject matter specialists could not speak effectively for the grassroots level population. Consequently local people merely observed implementation of activities but did not participate in the process. District level line agencies have a problem of community dialogue with grassroots level informal interest groups. Direct dialogue with beneficiary user groups improves chances for participation; these can be identified as informal but viable people's local institutions.

Recommendation(s):

40. HMG should give more priority to participatory technical assistance. HMG can play a more effective role in a bottom up planning process. HMG's role should be to render technical assistance and support to user groups and local initiative.
41. HMG should use existing institutions and facilities wherever possible. Village level institutions exist in Nepal. Therefore, HMG should support and improve the functioning of appropriate existing institutions rather than create new organizations or institutions unless no alternatives exist.
42. HMG extension efforts should rely on leader farmers and provide more support to poorer and more indifferent farmers. The success of the Begnas Tal Project in selecting local conservation farmers reveals that these farmers can be used as local paratechnical staff in extension systems in agriculture and natural resource management. At the same time, extension must also involve poorer and more indifferent farmers in order to bring self-reliant and sustainable development to the needy in an equitable manner. The thrust should be on training poorer farmers and supporting their self help initiatives effectively and efficiently with a view to improving their use of available resources.

Finding: HMG and RCUP funding methods and timeliness were mostly standard practice with some exceptions which included direct financing and the timely disbursement of funds.

The team found that direct financing was a more flexible and efficient funding mechanism and qualified for higher rating. There is currently an absence of viable institutional mechanisms to coordinate donor funding at the district level; however viewed

in the context of the Decentralization Act, district panchayats can be the recipient institution for direct financing.

Late release of funds is a recurring problem in the HMG budget release procedure. The defreezing procedure is inconsistent, and banks provide certification of frozen balance only after three months, after which time the installment is generally released.

Recommendation(s):

43. HMG should use district panchayats as medium of direct financing. Donors have directly funded some of the programs and these programs have produced good results. As there may be more than one agency working in a district, HMG should attempt to coordinate donors at the district level. Any direct funding of community development programs can be agreed on between the district panchayat and donors. In order to do so, however, district panchayats will be required to follow the policy guidelines of HMG.
44. HMG should improve the budget disbursement mechanism. Delays in budget disbursement is a traditional problem for HMG. Donors as well as district authorities and political representatives have repeatedly pointed out this problem and even suggested new approaches; however, the problem persists. Absence of proven initiatives to improve budget disbursement and reduce mismanagement may further encourage donors to do more direct financing. Therefore, HMG should be prompt to look at the possible range of alternatives to alleviate this recurring problem.

Finding: With the exception of RCUP's support of the IOF, most of the project activities did not contribute to technical and professional training. Referring to the matrix rating, the above finding is strikingly obvious. Training is generally limited to HMG staff only.

Recommendation(s):

45. HMG as well as donors should give high priority to professional and technical training in natural resource management. More professional training should be provided in-country. Technical training should be made available to technicians, user groups, paratechnical farmers, women, and NGO personnel. PVOs, like CARE/Nepal are giving high priority to local user group training but the professional training component is generally weak and must also be strengthened.

Finding: Implementation of Decentralization and other policies is in transition but moving in the right direction. Fiscal rules are often interpreted as a constraint to implementation of decentralization because Fiscal Administration Rules do not recognize working through user groups but through contractors. Mobilization of user groups is not fully operational in practice.

In Kagbeni, the Small Farmers Development Program (SFDP) and the Women Development Section program are working to complement each other. The former is providing the credit for women groups while the latter facilitates the formation of women groups.

Recommendation(s):

46. HMG should match fiscal rules and regulations with decentralization policy. As noted above, one of the serious constraints to implementing programs through user groups is the existence of inappropriate fiscal rules in the administration of decentralization. Therefore, an amendment of fiscal rules is necessary. This should be accompanied by training of accountants and project managers in implementation procedures.
47. WDS should focus more on areas where SFDP and similar credit programmes are run by local banks.
48. Based on the experience of other projects and programs, PVOS should be used as a means for donor support. This approach does not conflict with the decentralization concept. In addition to investments in program implementation, PVOs should also allocate reasonable resources to training HMG counterparts and to developing local institutions building activities.

CHAPTER 7

LINKS WITH USAID BIOLOGICAL DIVERSITY STRATEGY

Introduction

The United States Agency for International Development has been directed by the U.S. Congress to address the issue of biological diversity in every country that receives economic assistance from the United States. In terms of this evaluation, the issue is whether there is a link between USAID's Resource Conservation and Utilization Project and biological diversity.

Finding: As should be expected from a project whose primary goal is to conserve soil and natural resources, there is a demonstrable link between RCUP and biological diversity.

Plantations:

The use of local species for plantations ensures that the genetic variation of those species will exist in the future. Especially under the small watershed component of RCUP, indigenous species, rather than exotics have been used for plantations. Although a project is underway to establish a seed center, Nepal presently lacks an established seed collection and germplasm facility. It is crucial that local species continue to be planted, both from seed and by vegetative propagation.

Additionally, tree plantations carried out under RCUP are mixed species plantations. The decision to avoid monoculture acts as both a short term risk avoidance measure and a long term source of biological diversity. Plantations as sources of fuelwood, fodder, and construction materials also reduce the pressure on natural forests.

Finally, in areas where plantations have been established on previously degraded lands (e.g., Panchayat Forests), local villagers report an increase in wildlife, both in variety of species and total numbers. In two cases, villagers reported the return of species such as leopard and partridge that had previously been forced out of the area due to human pressure and a lack of suitable habitat.

Natural Forest Management:

A combination of factors has led to a new emphasis on the development of forest management plans for the existing natural forests of Nepal. The Panchayat Forest and Panchayat Protected Forest policy of HMG requires the submission of a management plan to the Department of Forest. The Master Plan for the Forestry Sector, the Nepal-Australia Forestry Project, the Community Forestry Project, and USAID's proposed Forestry Development Project all show an increased need for better management of Nepal's existing forest land.

The management of natural forests ensures a continuing pool of indigenous genetic material, more so than plantations which often consist of only two or three species at the outset; also, natural forests provide for the greatest possible diversity of indigenous plant and animal life.

Finally, recent trials by the Nepal-Australia Forestry Project suggest that managed natural forests in Nepal can produce up to seven times as much biomass per unit area as unmanaged forests. If these initial findings are confirmed to be valid in the long term, management of natural forests in Nepal will provide a great increase in production, resulting in less pressure on existing forest land and greater diversity of natural resources.

Livestock:

The protection of grazing areas and the promotion of stall feeding of livestock promotes the growth and reproduction of natural trees, grasses and brush. The team saw examples in Mustang, Gorkha, and Kaski Districts of simple protection providing great increases in fodder species and production.

The planting of fodder trees on private farm land has greatly increased in the last decade. Whether propagated by seedlings or cuttings, this practice provides inexpensive, local fodder and contributes to biological diversity.

Agriculture/Agroforestry:

Especially in Mustang District, the practice of intercropping fruit trees with agricultural crops is growing in popularity. This is viewed as both a risk avoidance and cash income strategy by the farmers, but the avoidance of monoculture and the introduction of new horticultural species and varieties is an excellent source of biological diversity.

The small watershed component of RCUP has provided irrigation to several areas. This source of water is permitting double and triple cropping in places that would otherwise remain fallow for much of the year. It also permits the introduction of improved species and varieties of grains and vegetables, further expanding the biological base of the local agricultural system.

Recommendation(s):

49. Biological Diversity is, and should continue to be, linked to USAID's initiatives in natural resource management.

The current portfolio includes the Agricultural Research and Production Project, which promotes research and extension activities to introduce improved species and varieties of agricultural crops, and the Rapti Rural Development Project

which works with both the Ministry of Agriculture and Ministry of Forest and Soil Conservation to improve production of livestock, agriculture and forests. As these projects proceed, USAID should continue to monitor their role in maintaining biological diversity in Nepal.

The new Institute of Forestry (IOF) and Forestry Development Project (FDP) are likely to contribute to biological diversity in a number of ways. The IOF will train the technicians and scientists necessary to manage existing natural resources well into the next century. This has been a constraint in the past and continues to be one today. The Forestry Development Project, by coordinating with such diverse agencies as HMG, the King Mahendra Trust for Nature Conservation (KMTNC), the International Union for the Conservation of Nature and Natural Resources (IUCN), and the World Bank, will ensure that USAID's future activities are well coordinated with Nepal's National Conservation Strategy and the Forestry Master Plan for their contribution to the maintenance of Nepal's biological diversity.

CHAPTER 8

CONDITIONS FOR REPLICATING TECHNOLOGIES, ACTIVITIES AND PROCESSES

Introduction

The evaluation team defines replicability as extending the impact of an activity beyond a site or group where it was initiated or adoption of an appropriate technology, activity, or process (e.g., a planning process, a management framework) by others (i.e., non-participants or non-beneficiaries).

Findings and Recommendations

Finding: Based upon the evaluation of impact, participatory approaches, and sustainability indicators, elements of some activities, technologies, and processes are potentially replicable. (Note: The team discussed these in greater detail in preceding chapters but has drawn them together here for emphasis and easier reference.)

Recommendation(s):

50. The most replicable elements of the small watershed approach of RCUP are:
 - a) more sharply focusing objectives on attainable and sustainable results;
 - b) selecting smaller geographic areas and providing relatively smaller levels of funding for project activities;
 - c) experimenting with and adopting more innovative and responsive ways to implement decentralization and other national-level policies that focus on basic needs (see chapter on Institutions);
 - d) using more bottom-up, participatory approaches to technical assistance delivery (see chapters on Institutions and Sustainability);
 - e) providing more efficient planning and support management (see chapter on Institutions);
 - f) taking advantage of existing opportunities with due consideration of equity issues (i.e., between genders, classes, ethnic groups and generations) within an area and between areas covered by a project (see chapter on Participation);
 - g) finding better ways to foster and support the participation of local people, through user

groups and other participatory approaches, in all phases of project conception, initiation, planning, implementation, evaluation, and long term maintenance (see chapter on Participation);

- h) planning and implementating activities which meet conditions for technical, social, economic, and institutional sustainability (see chapter on Sustainability);
- i) giving more priority to training technical and professional people, especially in participatory approaches and in planning and implementation for sustainability (see chapter on Institutions);
- j) ensuring that the technology used is appropriate (i.e., local materials, low cost); that it either does not have a negative environmental impact or has mitigating measures to reduce its potential negative impacts; and, that it includes the most effective and efficient technologies that are available (see chapters on Impacts and Sustainability).

Finding: Replication does not imply exact duplication of activities technologies or processes from one site to another.

Recommendation(s):

- 51. USAID and HMG should require careful consideration and adaption of these activities, technologies, or processes to specific sites where they are extended or adopted.
- 52. HMG should promote the dissemination of information about the conditions for activities, technologies, and processes through a variety of mechanisms (e.g., study tours) that provide details and discussion of the potential range of necessary elements for success.

APPENDIX 1

FOOTNOTES TO EVALUATION MATRIX

The following briefly outlines the team's general rationale for each rating under a specific indicator within the evaluation matrix. Not all sites visited have been included in the Matrix. Some were excluded because they were not RCUP activities; others were excluded because they were RCUP building projects that were basically standard activities that included no local participation.

Nareswor Women in Development Activity

Technical indicators

- Environmental Impacts--They are planting fodder trees and doing some stall feeding. Though raising cattle, they are also growing vegetables.
- Soil Loss--Stall feeding and cut and carry system is partially operative which should have long term impacts on reducing the loss of soil.
- Multipurpose--There is diversification of activity, and multiple opportunities are being met.
- Technical Appropriateness--Quite appropriate.
- Technical Effectiveness--Meeting objectives of income generation and with complementary activities such as planting of fodder trees, this may make contributions to resource conservation.

Economic Indicators

- Economic Efficiency--Women have realized significant additional income. Some have even repaid the loan.
- Employment and Income--This activity has generated self-employment and consequently extra income
- Cost Effectiveness--They have diversified activities but no activity is fancy or expensive.

Social Indicators

Participatory Approaches

- User Group--Excellent example of women's activities of various interest groups. Commitment proceeds far into the future.
- Other Groups--Support from the local panchayat.
- Leadership/Catalyst--Catalytic role played by WDO; support of local Pradhan Panch is commendable
- Extension/Local Training--WDO got training in various fields and is trying to share this knowledge with others.
- Demonstration Effects--As husbands found their wives

had more information after their participation in WID activities, they became more supportive of their wives' efforts.

Institutional Indicators

- Planning--Confusion in program policy has constrained effective planning.
- Technical Assistance Strategy--Bottom-up strategy; however, there is no institutional arrangement for perpetual technical assistance or long term funding.
- Funding Method/Timeliness--Flexibility exists, but the traditional lengthy credit procedures constrains it.
- Technical/Professional Training--Slightly positive since the WDO had acquired some technical training.

Tukuche Irrigation System

Technical Indicators

- Environmental Impact--Perhaps some erosion caused by constructing trench for pipeline but probably not significant in long term.
- Soil Loss--Perhaps some soil loss caused by trench but balanced by some possible stall feeding with water supply and consequent reduced grazing pressure.
- Multipurpose--Reduced risk, multi-cropping, stock watering, irrigation.
- Technical appropriateness--Easily repaired; locals learned how to maintain; yearly rebuilding of simple intake structure appropriate.
- Technical Effectiveness--Some uncertainty because of difficulty in building trench in rock wall and necessity to redo intake structure regularly, but this is technically appropriate; has outwash valves and pressure reducers.

Economic Indicators

- Economic Efficiency--Benefit/cost ratio appears positive because of high value of increased productivity.
- Employment and Income--Large input of money to Tukuche area with jobs and secondary benefits.
- Economic effectiveness--Probably could not have been done more cheaply.

Social Indicators

Participatory Approaches

User Group--Was their idez; they contributed at least 5% of total cost in volunteer labour and perhaps as much as 30% of available time in off-farm season; sinking/maintenance fund ensures long term commitment; fact that they learned how to build pipeline means that they should be able to technically repair it.

Other Groups--District Panchayat chairman fully backed the activity, lending political support (but no financial support came from the District Panchayat).

Leadership/Catalyst--People worked well together but there was no outstanding leader.

Women in Development--Women worked on building the pipeline ditch, but involvement was not particularly unusual.

Extension/Local Training--Local training was involved, especially important for maintenance tasks over long term.

Demonstration Effect--This has not yet happened, but the potential is great.

Institutional Indicators

Planning--Technical and financial planning were well conceived and implemented.

Technical Assistance Strategy--Bottom-up approach with much local expertise involved, even though a contractor did most of the engineering work.

Funding Method/Timeliness--Innovative with donor aid going to contractor rather than through HMG; innovative "sinking"/maintenance fund to cover recurrent costs.

Technical/Professional Training--None

Durbar Palace Trail Improvement (Gorkha)

Technical Indicators

Environmental Impacts--Improvement.

Soil Loss--Compared to path before, it is much better.

Multipurpose--Recreation, headload, etc.

Technical Appropriateness--Appropriate for aesthetics.

Technical Effectiveness--Very.

Economic Indicators

Economic Efficiency--Tourism benefits may outweigh costs.

Employment and Income--Lots of people hired.

Cost Effectiveness--Only used loose rocks; to build

trail as wide as it is aesthetic; probably cheapest.

Social Indicators

Participatory Approaches

User Group--Certain percent done by people; wasn't their idea; probably will maintain certain steps near them; government will probably do if user group doesn't.

Other Groups--District Panchayat; well organized.

Leadership/Catalyst--None evident.

Women in Development--Women use to go get water; some participation.

Extension/Local Training--In order to maintain.

Demonstration Effects--Many asked for trail improvement after this, demand couldn't be met.

Institutional Indicators

Planning--Good.

Technical Assistance Strategy--Trail started before national priority; demand of local panchayat; not fully bottom-up; catchment committee at district level; not fully local.

Funding Method/Timeliness--Very routine.

Technical/Professional Training--Not applicable.

Kaqbeni Plantation

Technical Indicators

Environmental Impacts--Grass was growing.

Soil loss--Not great, but not enough grass to really hold soil; not great example of soil conservation; less wind erosion.

Multipurpose--Principally fuelwood.

Technical Appropriateness--Used local technology--tall cuttings.

Technical Effectiveness--No mortality.

Economic Indicators

Economic Efficiency--Benefits are higher; local work; didn't over plant; important perhaps more in the very low cost than in the actual benefits; people perceived that it would be in excess of 4 Rs.

Employment and Income--Each person will not pay for fuelwood or will gain income.

Cost effectiveness--But, is there a cheaper way of doing a plantation; there are few forests that people could actually remove wood from;

cheaper than government plantations; because it is private.

Social Indicators

Participatory Approaches

User group--Provided own money, own labor, paid money, long term commitment.

Other groups--None indicated.

Leadership/catalyst--Strong, because of Women Development Officer.

Women in Development--Effects more than women.

Extension/Local Training--Good.

Demonstration Effect--Based on potential.

Institutional Indicators

Planning--Program planning; WDS isn't in all panchayats, therefore, are limits to how far this model can be pushed.

Technical Assistance Strategy--local; She should be doing more networking; should be using local ranger more, de-facto user group now.

Funding Method/Timeliness--Didn't need other funds; village panchayat rents land which gives money to panchayat for use.

Professional/Technical Training--WDO could have learned how to do more effective plantations in this area; field training through action.

Marpha Farm Training Building, Greenhouse, and Threshing Area

Technical Indicators

Environmental Impacts--Used as training site and seed storage, etc. so generally no negative impact.

Soil Loss--Some during construction but stabilized.

Multipurpose--Provides training benefits, demonstration benefits, etc.

Technical Appropriateness--Well built; no fancy system; threshing area is quite appropriate.

Technical Effectiveness--For objectives it is very effective.

Economic Indicators

Economic Efficiency--Benefits outweigh costs; vegetable seed production is increasing income in area; people are using threshing area.

Employment and Income--Has both direct income for employees of Farm and indirect for those who are beneficiaries of their efforts.

Cost Effectiveness--Local materials used basically;

greenhouse might have been done more cheaply with plastic but that would not have held up in wind.

Social Indicators

Participatory Approaches

User Group--Not applicable.

Other Groups--Not applicable.

Leadership--Pasang Sherpa came to RCUP, he is a major force in the area.

Women in Development--Indirectly women benefit through income from vegetable and seed production; perhaps some employment during building construction.

Extension/Local Training--People are taught here how to grow and generate vegetable seeds; used to demonstrate that vegetables and other crops can be grown as cash crops.

Demonstration Effects--Easily accessible; may serve as demonstration for other horticultural farms across the country.

Institutional Indicators

Planning--Well situated and designed, but had to import cement.

Technical Assistance Strategy--Idea came from P. Sherpa; good show of interagency cooperation.

Funding Method/Timeliness--Basically a turn key operation which was contracted out; standard HMG; not innovative.

Technical/Professional Training--JTs and JTAs are getting training at the facilities.

Thuliban PPF

Technical Indicators

Environmental Impacts--Good job, improved water quality.

Soil Loss--Ground cover and canopy is dense, so less soil erosion.

Multipurpose--People are getting fuel, fodder, water for livestock, using it as demonstration area; timber available.

Technical Appropriateness--Most appropriate to manage with technology of management plan.

Technical Effectiveness--Area is effective, didn't need plantation supplementation; in line with need of people.

Economic Indicators

Economic Efficiency--Very beneficial because cost is minimal; more economically efficient than plantation.

Employment and Income--With good management and sustained yield, this has high potential; has high sustainable employment potential to maintain it.

Cost Effectiveness--Cheaper than plantation.

Social Indicators

Participatory Approaches

User Group--Commitment of user group existed; they had already been maintaining a watchman; this may have undercut the traditional system of maintaining watchman; people will pay for him eventually through income from the sustained yield.

Other Groups--Nothing.

Leadership/Catalyst--People were in process of protecting the forest but not making it a Protected Panchayat Forest; needed Baral to make plan, remove him from the situation and the forest would have already been instituted.

Women in Development--Women employed and get benefits.

Extension/Local Training--They now know about sustained yield; should monitor for success over time.

Demonstration Effect--Impact on other communities.

Institutional Indicators

Planning--Good management plan.

Technical Assistance Strategy--User group developed idea; he developed plan and then discussed it with people.

Funding Method/Timeliness--Not like regular HMG because it didn't require much funding.

Technical/Professional Training--Nothing special.

Putak Plantation

Technical Indicators

Environmental Impacts--Protected from grazing.

Soil Loss--Stopping grazing; reduced soil loss by increasing grass cover.

Multipurpose--Provide fodder, fuel, construction poles and erosion control.

Technical Appropriateness--Used local materials, cuttings.

Technical Effectiveness--70-80% rates; have gone

back in and interplanted; DOF forests weren't there; it is fenced.

Economic Indicators

Economic Efficiency--Costs that went in were much less than value; grasses and trees are worth a lot.

Employment and Income--Potential but not yet realized.
Cost Effectiveness--Is a low cost activity.

Social Indicators

Participatory Approaches

User Group--Chairman of District Panchayat took idea to user group; they did a lot of work; they will sustain it.

Other Groups--Not panchayat.

Leadership/Catalyst--Role of Chairman.

Women in Development--Women will benefit.

Extension/Local Training--Locals learned a lot; learned from failures of department; learned legalities; learned about protection from grazing and increased fodder production.

Demonstration Effects--Potentially very high; but distant from others.

Institutional Indicators

Planning--Done on DOF land without DOF knowledge; not all legal issues were dealt with in advance.

Technical Assistance Strategy--Bottom up approach; District Panchayat chair acted as a good bridge.

Funding Method/Timeliness--Direct funding; pretty routine.

Technical/Professional Training--Not found.

Dunje Irrigation Scheme

Technical Indicators

Environmental Impacts--Grass will be improved; there will be an increase in production due to water; orchard was already there.

Soil Loss--Will be reduced because of grass.

Multipurpose--Will provide fodder and grass; grass and beans have been added to production system.

Technical Appropriateness--Gravity scheme; rubber pipe; drainage ditch; nothing particularly inappropriate.

Technical Effectiveness--Effective.

Economic Indicators

Economic Efficiency--Benefits outweigh costs of system.
Employment and Income--People were hired to look after the system.

Cost Effectiveness--Couldn't have been done cheaper.

Social Indicators

Participatory Approaches

User Group--Idea about project originated with group; provided volunteer labor; long-term commitment to maintenance.

Other Groups--None apparent.

Leadership--Families went to AID; Pradhan Pancha provided support.

Women in Development--Women were given some employment; they provided some volunteer labor and will presumably reap some of the benefits of improved production.

Extension/Local Training--People learned how to put pipes together which will be essential to learning how to maintain system.

Demonstration Effects--Other villages had looked at activity and were interested.

Institutional Indicators

Planning--Well planned, but not extraordinary; about equivalent to Tukuche activity.

Technical Assistance Strategy--Appeared to rely in great part on User Group instead of top down.

Funding Method/Timeliness--Innovative; more direct aid from AID to the group; group management of the fund; no built in maintenance fund may cause problems over time.

Technical/Professional Training--None.

Binda Bashini Nursery

Technical Indicators

Environmental Impacts--Big nursery; first done under RCUP; site location and maintenance were good; one of better ones we saw.

Soil Loss--Pretty much same reasons as above; linking nursery to plantations, there is a carryover of positive impact.

Multipurpose--Producing some fodder species, serving as demonstration and teaching area; wasn't producing horticultural seedlings.

Technical Effectiveness--Producing as many seedlings as needed; coverage of area is good.

Economic Indicators

- Economic Efficiency--Reasonably good; little cost to run nursery; Panchayat gets proceeds; will be people's asset; unit cost will continue to be low with intended management by Panchayat.
- Employment and Income--Will provide local employment and is generating income to be used by schools, etc.
- Cost Effectiveness--Seedlings might have been produced more cheaply; not a negative; not much wasteful about it.

Social Indicators

Participatory Approaches

- User Group--Because of village Panchayat involvement; future plans will make it even more participatory; should be monitored next year to see how successful the transfer is and whether it is a viable model.
- Other Group--Was formal village panchayat; panchayat gets money; more social benefits.
- Leadership/Catalyst--Pradhan Panch was very influential; his daughter will be ranger.
- Women in Development--Good because of woman ranger involvement.
- Extension/Local Training--Informal training; forester would go to local schools to show how to set up.
- Demonstration Effect--Has great potential as a model; should be monitored to see how it functions when turned over to village.

Institutional Indicators

- Planning--As originally planned, nothing unusual; site was good; idea evolved rather than was planned.
- Technical Assistance Strategy--Because of way it has evolved it has more merit than based on how it was originally implemented.
- Funding Method/Timeliness--Issue of production levels being over 15,000 the money goes to the village; this is a new funding method.
- Technical Professional Training--Some informal training; woman ranger has gotten training because of forestry program.

Binda Bashini Water Source Protection

Technical Indicators

- Environmental Impacts--Vast improvement; biological

filter maintained; no cattle grazing effect.
Soil Erosion--No cattle grazing; reduced soil loss.
Multipurpose--Reduce erosion; water quality etc.
watchman, no fence, was degraded forest, but
planted some Schima and alnus which may be
marginal may have been overdone; planting is
a means to an end, i.e., planted areas are
protected.
Technical Effectiveness--Appears very effective; over
time it may not continue; perception is that
it has doubled water supply.

Economic Indicators

Economic Efficiency--No fence; just a chokidar; cost
for interplanting.
Employment and income--One chokidar.
Cost effectiveness--Didn't need to plant trees, didn't
put up a fence.

Social Indicators

Participatory Approaches

User groups--In favour/committed to it now; we
don't know whether they requested it; general
requirement; no participation in development;
are cooperative in keeping animals out.

Other Group--Activity was requested by village
panchayat.

Leadership catalyst--Don't know.

Women in Development--Gain benefits.

Extension/Local Training--None.

Demonstration Effects--some.

Institutional Indicators

Planning--Nothing spectacular.

Technical Assistance Strategy--Requested chokidar back
when he had been removed.

Funding Method/Timeliness--Nothing unusual.

Technical/Professional Training--None.

Chhairo Irrigation Project (Tibetan Refugees)

Technical Indicators

Environmental Impacts--Improved terraces, reclaimed
land.

Soil Loss--Negligible; was all rocky before; improving
soil that is being brought in; terraces
built, building up soil with manure, etc.
gradient is reduced, scouring reduced,
terraces are within tolerable erosion rate of
10 m³/ha/year; may not have enough

quantitative data.

Multipurpose--Diversified their crops, buckwheat and barley.

Technical Appropriateness--Irrigation canal was rock and concrete, could have been just rock or clay but it would have leaked, might have saved some money; reasonably appropriate, but not impressive.

Economic Indicators

Economic Efficiency--Positive, production of crops was reasonably high compared to the real costs of Rs 44,000, production had exceeded Rs 44,000 for terrace improvements.

Employment and Income--45 employees, women highly involved.

Cost Effective--Could have used just stone and clay for canal.

Social Indicators

Participatory Approaches

User Group--Was Tibetan refugees idea; participated greater than 10 percent of total project cost, 25% of people shoveled dirt.

Other Groups--Not applicable.

Leadership/catalyst--Pasang Sherpa--played key role.

Women in Development--Involved in work, but we don't know about role in other aspects.

Extension/Local Training--Learned how to build and perhaps maintain canal.

Demonstration Effect--Probably good, especially because of reclaiming land.

Institutional Indicators

Planning--Well planned, wasn't that hard to design; nothing done wrong.

Technical Assistance Strategy--received by institutions well.

Funding Method/Timeliness--Possible to do it from AID; first assistance camp had received from any other agency other than High Commission; degree of bravado in undertaking it; can AID continue to give to this kind of activity. May not be replicable. May be one shot deal.

Technical/Professional Training--None.

Bijulidada Stock Pond

Technical Indicators

Environmental Effects--Positive; stall feeding and

stock watering benefits.
Soil Loss--Probably won't be significant.
Multipurpose--Only stock watering.
Technical Appropriateness--Local materials; included local methods of construction.
Technical Effectiveness--Worked well; maintained with local clay.

Economic Indicators

Economic Efficiency--Cheap to build.
Employment and Income--Provided some temporary jobs; contracted stone wall (Rs 2000).
Cost effectiveness--No cheaper way to build.

Social Indicators

Participatory Approaches
User Group--They wanted it; donated labor; already repairing it.
Other Groups--None.
Leadership/Catalyst--Nothing.
Women in Development--Women more involved in water supply issues.
Extension/Local training--Learned about building and repairing stock ponds.
Demonstration Effects--Potential good; successful.

Institutional Indicators

Planning--Well designed; planned to involved local people; technically planned cost effectively; planned to include maintenance; DSCWM gave minimum capital outlay and technical assistance, people did work.
Technical Assistance Strategy--Involved locals; bottom up.
Funding Method/Timeliness--Nothing special.
Technical/Professional Training--none.

Durbar Palace Plantation

Technical Indicators

Environmental Impacts--Reduce erosion; grass growing; well protected.
Soil Loss--Good cover.
Multipurpose--Environmental value; horticultural species; tourism.
Technical Appropriateness--Not overdone, except may be for fence.
Technical Effectiveness--Purpose for preservation and tourism; political and cultural values.

Economic Indicators

Economic Efficiency--Recreation benefits will outweigh costs of plantation.
Employment and Income--Potential is high.
Cost Effectiveness--Cheaper way of protecting this area, less fencing.

Social Indicators

Participatory Approaches
User Group--Special case.
Other Groups--Special case.
Leadership/catalyst--None evident.
Women in Development--Recreation is a possibility.
Extension/Local Training--Not evident.
Demonstration Effects--People may be planting because this looks nice.

Institutional Indicators

Planning--Well planned.
Technical Assistance Strategy--Special case.
Funding Method/Timeliness--Beyond standard; moving faster than other places; special case.
Technical/Professional Training--None.

Leglikot Plantation

Technical Indicators

Environmental Impacts--Is protecting site; land was barren before.
Soil Loss--Was barren; good protection.
Multipurpose--Timber, grasses, no fruit trees.
Technical Appropriateness--Couldn't have done more.
Technical Effectiveness--Good survival rates; protection is good.

Economic Indicators

Economic Efficiency--Outweighs costs.
Employment and Income--Some temporary employment; one watchman.
Cost Effectiveness--Probably couldn't have been done cheaper; in long run it will produce timber species.

Social Indicators

Participatory Approaches
User Group--User's group was involved; being adopted as a Panchayat Forest.
Other Group--No other formal group, but Panchayat

will benefit because of user group contribution.

Leadership/Catalyst--No one special.

Women in Development--some positive impact on women.

Extension/Local Training--Could be repeated elsewhere.

Demonstration Effects--Historical place; good use of plantation to help this kind of area.

Institutional Indicators

Planning--Standard.

Technical Assistance Strategy--User group requested; agency was responsive.

Funding Method/Timeliness--Standard.

Technical/Professional Training--None.

Gorkha Central Nursery

Technical Indicators

Environmental Impacts--Small nursery; putting out wide variety of plants for Durbar and Gorkha Bazaar area; well-situated.

Soil Loss--Nursery isn't causing any; well-terraced.

Multipurpose--Had wider variety of species; nursery serving the National Priority Area.

Technical Appropriateness--Nothing outstanding.

Technical Effectiveness--Range of seedlings produced successfully.

Economic Indicators

Economic Efficiency--About the same as most.

Employment and Income--Typical nursery for local employment.

Cost Effectiveness--Nothing could have been done cheaper, but no innovative methods.

Social Indicators

Participatory Approaches

User Group--None.

Other Groups--Schools and local panchayat.

Leadership/Catalyst--Nothing special.

Women in Development--Good employment opportunity for women.

Extension/Local Training--None evident.

Demonstration Effects--Some with schools.

Institutional Indicators

Planning--Standard HMG.

Technical Assistance Strategy--Standard HMG.

Funding Method/Timeliness--Standard.

Technical/Professional Training--No impact.

Simpani Trail Improvement

Technical Indicators

Environmental Impacts--Slightly positive since it improves condition of trail.
Soil Loss--More stabilized trail.
Multipurpose--Serving a number of purposes to local people as well as stabilizing against soil loss.
Technical Appropriateness--Local materials.
Technical Effectiveness--Generally good.

Economic Indicators

Economic Efficiency--Reduction of travel time.
Employment and Income--Local peoples were employed; indirectly will help as well.
Cost effectiveness--Used local materials; simple stones.

Social Indicators

Participatory Approaches
User Group--Some people have done earthwork part.
Other Groups--Panchayat was also involved in decision making process.
Leadership/Catalyst--Nothing special.
Women in Development--Women worked on improvement; they use the trail.
Extension/Local Training--Nothing special.
Demonstration Effects--More and more are demanding the improvements; this will probably contribute to their ideas about how to improve their trails.

Institutional Indicators

Planning--Standard HMG.
Technical Assistance Strategy--Nothing unusual.
Funding Method/Timeliness--Standard.
Technical/Professional Training--None.

Choprak Plantation

Technical Indicators

Environmental Impacts--Had positive effect; would have higher score a year ago before high losses.
Soil Loss--Had some positive effect on stream bank erosion.
Multipurpose--Serves as river bank control; producing

fuelwood and fodder.
Technical Appropriateness--Nothing inappropriate about plantation technology; some question about location but not like in Kali Gandaki; once in 50 year event.

Economic Indicators

Economic Efficiency--Incurred great cost and now 60% is gone; generally these Dalbergia and sissoo plantations are very positive because of furniture making; benefits are only 40% of what they would have been, yet without it there would be no benefit.
Employment and Income--Flood may cause more employment because of casualty replacement.
Cost Effectiveness--Reasonably standard plantation; if they had used gabions, it would have been less cost effective.

Social Indicators

Participatory Approaches
User Group--Classical DOF plantation.
Other Groups--Nothing.
Leadership/Catalyst--Nothing.
Women in Development--Common for women to be involved.
Extension/Local Training--Nothing.
Demonstration Effects--Nothing.

Institutional Indicators

Planning--Standard, generally good idea and site location.
Technical Assistance Strategy--Standard.
Funding Method/Timeliness--Standard.
Technical/Professional Training--None.

Choprak Nursery

Technical Indicators

Environmental Impacts--Reasonably well-situated; not along main trail; still a water problem.
Soil Loss--Laid out so that it would not contribute greatly to soil loss.
Multipurpose--No horticultural species.
Technical Appropriateness--Nothing unusual, except for building which was typical government building.
Technical Effectiveness--Standard, stone, raised beds, etc.

Economic Indicators

Economic Efficiency--Reasonable B/C ratio.
Employment and Income--People are employed.
Cost Effectiveness--Are producing seedlings in about the cheapest way; if increased production, they might decrease per unit cost.

Social Indicators

Participatory Approaches
User Group--Nothing with Panchayat; probably will limit future user group participation.
Other Group--Nothing.
Leadership/Catalyst--He is still willing to finish it, especially if they can get contract/
Women in Development--Some employment and benefits; more women are hired than men.
Extension/Local Training--None really.
Demonstration Effects--Nothing spectacular.

Institutional Indicators

Planning--standard, but fell down on programming funds.
Technical Assistance Strategy--Originally developed to work with locals on development of water supply, but failed.
Funding Method/Timeliness--Fell down in providing funds to finish system.
Technical/Professional Training--None.

Dhungade Landslide Rehabilitation

Technical Indicators

Environmental Impacts--Reduce erosion; may have some water quality effects because of clay soil over short term; reduce chalky soil going on downstream.
Soil Loss--Some positive reduction.
Multipurpose--Water quality and reduction of erosion.
Technical Appropriateness--did use local materials.
Technical Effectiveness--May have reduced erosion but water quality benefit will be zero; will trap clay only for two years, and then it will wash over check dams.

Economic Indicators

Economic Efficiency--Benefits will not exceed costs.
Employment and Income--Some temporary jobs.

Cost Effectiveness--Vegetative and grazing controls would have been at least as effective and cheaper.

Social Indicators

Participatory Approaches

User Group--Group initiated idea; requested activity; didn't volunteer labor; claimed to do some grazing protection; no long term commitment evident; drainage element was important; have agreed that it is necessary but haven't done anything yet but have given verbal commitment to work on it.

Other Group--None.

Leadership/Catalyst--Role of Pradhan Panch; was active in getting this and would like more for Panchayat.

Women in Development--some temporary employment.

Extension/Local Training--None.

Demonstration Effect--Limited vegetation management and commitment for drainage control and grazing control exist; positive example.

Institutional Indicators

Planning--Not addressed water quality problem correctly; not involving users from beginning in drainage control.

Technical Assistance Strategy--Top down in spite of user control idea; government was responsive

Funding Method/Timeliness--Standard HMG.

Technical/Professional Training--None.

Thinigaun Water Source Protection

Technical Indicators

Environmental Impact--Water quality and quantity improved; area well protected.

Soil Loss--Slightly lessened.

Multipurpose Aspects--Drinking water, irrigation, stock watering.

Technical Appropriateness--Check dams not needed; protection would have sufficed.

Technical Effectiveness--Has worked; checkdams probably not needed.

Economic Indicators

Economic Efficiency--Unnecessary checkdams; protection would have been adequate measure; cost exceeds benefit.

Employment and Income Effects--No effect.

Cost Effectiveness--Could have been achieved cheaper without structures.

Social Indicators

Participatory Approaches

User Group--None; top down.

Other Groups--None.

Leadership/Catalyst--Assume that someone had influence; project only benefits 6 families.

Women in Development Impacts--Intent is to have impact on major users of water supply, i.e., women.

Extension/Local Training--Potential exists; not enough data.

Demonstration Effects--May lead other villages to ask for the same thing; in general this is positive because the area is protected.

Institutional Indicators

Planning--There was a planning process which is important, but this was basically a negative process.

Technical Assistance Strategy--Basically a top down approach of HMG.

Funding Method/Timeliness--Basically standard HMG method.

Technical/Professional Training--None happened here.

Kholkhole Check Dams

Technical Indicators

Environmental Impacts--Some erosion control.

Soil Loss--Some reduced.

Multipurpose--Reduced erosion, some trail protection.

Technical Appropriateness--Overbuilt.

Technical Effectiveness--Seems to work; effective in protecting trail; effective in protecting the gully.

Economic Indicators

Economic Efficiency--Benefits are higher than costs; trail protection; agriculture; protection to khet land; protection to approximately 3 ropanis; Rs 60,000 cost.

Employment and Income--Local temporary labor.

Cost Effectiveness--Other measures could have been taken that would have been cheaper.

Social Indicators

Participatory Approaches

User Groups--None.
Other Groups--Catchment Conservation Committee.
Leadership/Catalyst--some mention of leader.
Women in Development--Women carry stones for
employment.
Extension/Local Training--None.
Demonstration Effects--None.

Institutional Indicators

Planning--Could have used other technical measures; no
user group involvement; if they had moved one
of the checkdams and tied it in better it
would have worked better.
Technical Assistance Strategy--Top down; standard for
RCUP.
Funding Method/Timeliness--Standard.
Technical/Professional Training--None.

Khoplang Water Supply

Technical Indicators

Environmental Impacts--May be some stock watering
positive impacts; stall feeding impacts.
Soil Loss--Not significant.
Multipurpose--Water supply and stock water.
Technical Appropriateness--Used local materials to
extent possible.
Technical Effectiveness--Was effective; supplied water.

Economic Indicators

Economic Efficiency--Benefits about 3000 people in 6
wards; has been going for 5 years.
Employment and Income--Some temporary jobs.
Cost Effectiveness--Not clear; may have been excessive
expense.

Social Indicators

Participatory approaches
User Group--None.
Other Groups--None.
Leadership/Catalyst--None evident.
Women in Development--Provided water for six wards.
Extension/Local Training--No built-in mechanism for
long term maintenance.
Demonstration Effects--Demonstrated a water supply
project; well protected at tank.

Institutional Indicators

Planning--Top down; didn't involve long term

maintenance.
Technical Assistance strategy--Top down; standard practice at that time.
Funding Method/Timeliness--Standard HMG.
Technical/Professional Training--None.

Bhusundi Gabions

Technical Indicators

Environmental Impacts--Some worked; some didn't but their impact wasn't negative; about half had positive effect; about half had no effect.
Soil Loss--On ones that worked there was some positive impact.
Multipurpose--Bank stabilization.
Technical Appropriateness--Wasn't particularly appropriate but wasn't all that bad.
Technical Effectiveness--Some were effective in short term; others not.

Economic Indicators

Economic efficiency--Probably not efficient because of high cost and low benefit.
Employment and Income--Some employed.
Cost effectiveness--Probably not most effective or cheap manner.

Social Indicators

Participatory Approaches
User Group--None.
Other Groups--None.
Leadership/Catalyst--None evident.
Women in Development--Nothing particular, but some temporary employment.
Extension/Local Training--none.
Demonstration Effects--none known

Institutional Indicators

Planning--area that could not be controlled; unachievable goal
Technical Assistance Strategy--top down
Funding Method/Timeliness--nothing special
Technical/Professional Training--none

Jomosom Plantations

Technical Indicators

Environmental Impacts--some were positive
Soil Loss--not appreciable
Multipurpose Aspects--provide fuel, river bank protection
Technical Appropriateness--was designed to meet plantation targets; inappropriate to meet fuelwood needs since it could have been done

better in a different way and in a different place; fencing was inappropriate
Technical Effectiveness--Not very effective in protecting river bank; little biomass production.

Economic Indicators

Economic Efficiency--On negative side.
Employment and income--Without the project, the money to employ locals would not have been there, so it may have had some positive impact.
Cost Effectiveness--There would have been cheaper ways to achieve the objective; if it had been put further uphill there would not have been the need to replant after it was washed away.

Social Indicators

Participatory Approaches
User Group--None were used nor was input obtained.
Other Group--HMG apparently just did it; land however was provided by the Panchayat.
Leadership--Was not an issue here.
Women in Development--Some women received money for labor; not a focus of the activity however.
Extension/Local Training--None.
Demonstration Effects--None probably; certainly no positive ones.

Institutional Indicators

Planning--Standard HMG; just to meet targets.
Technical Assistance Strategy--This was instituted before the Decentralization Act during a time when different ground rules governed how HMG should be evaluated; basically it reflects standard HMG practice prior to decentralization.
Funding Method/Timeliness--Standard.
Technical/Professional Training--None.

Khar Khola Check Dam

Technical Indicators

Environmental Impacts--Some reduced erosion.
Soil Loss--Some reduced soil loss.
Multipurpose--None.
Technical Appropriateness--Could have used vegetative ways and grazing control; dam was overbuilt.
Technical Effectiveness--Not clear whether it will be effective; slowed slope a bit; didn't control erosion on head cuts.

Economic Indicators

Economic Efficiency--Likely that costs exceed benefits; protected less than a ropani.
Employment and Income--Some temporary jobs.
Cost Effectiveness--30-50,000 Rs job, 1 dam; cheaper ways.

Social Indicators

Participatory Approaches
User Group--Nothing.
Other Groups--Panchayat involvement/Catchment Conservation Committee.
Leadership/Catalyst--None.
Women in Development--Some temporary employment.
Extension/Local Training--None.
Demonstration Effects--None known.

Institutional Indicators

Planning--Cheaper ways to do it; should have also been vegetative control and grazing control with it or in place of it.
Technical Assistance Strategy--Top down; standard before decentralization; HMG responded to group request.
Funding Method/Timeliness--Standard.
Technical/Professional Training--None.

Ampipal Check Dam

Technical Indicators

Environmental Impacts--Some positive.
Soil Loss--Reduced.
Multipurpose--None.
Technical Appropriateness--Other ways to do it, less costly ways.
Technical Effectiveness--Wasn't ineffective but wasn't particularly effective; did reduce the slope but didn't protect the sides and head cuts.

Economic Indicators

Economic Efficiency--Probably costs were greater than benefits; doesn't protect more than 2 ropanis for a cost of Rs 31,000; one land owner.
Employment and Income--Some were employed to build structure.
Cost Effectiveness--Other cheaper ways to achieve goals.

Social Indicators

Participatory Approaches

User Group--None.

Other Groups--None.

Leadership/Catalyst--None.

Women in Development--Some employment.

Extension/Local Training--None.

Demonstration Effects--Wasn't too bad, but it wasn't good example.

Institutional Indicators

Planning--Could have been planned cheaper and more effectively; should have had grazing and vegetative control.

Technical Assistance Strategy--Top down.

Funding Method/Timeliness--Nothing special.

Technical/Professional Training

Kobang Nursery

Technical Indicators

Environmental Impacts--Some positive effect; use of some water, producing 25,000 seedlings

Soil Loss--No effect.

Multipurpose--Not applicable.

Technical Appropriateness--Nothing new; less than average.

Economic Indicators

Economic Efficiency--Putting out many seedlings at low cost to build nursery, and because of demand for seedlings for fuelwood targets, it probably has value; not cost effective to provide seedlings for other areas.

Employment and Income--Work for some people.

Cost effectiveness--Not well maintained, could have produced more at higher quality at lower cost; more nurseries in other places; under capacity.

Social Indicators

Participatory Approaches

User Group--Not applicable.

Other Groups--Not applicable.

Leaderships Catalyst--Not applicable.

Women in Development--Some women employed.

Extension/Local Training--None.

Demonstration Effects--Don't replicate.

Institutional Indicators

Planning--Poorly planned; oversized.
Technical Assistance Strategy--Totally top down.
Funding Method/Timeliness--HMG standard.
Technical/Professional Training--Potential was higher than being realized.

Chambanjyang Check dam

Technical Indicators

Environmental Impacts--Erosion control component.
Soil Loss--Reduced soil loss.
Multipurpose--Original purpose to have a trail crossing; other purpose erosion control.
Technical Appropriateness--Same thing could have been done with smaller checkdam; overbuilt.
Technical Effectiveness--Not clear.

Economic Indicators

Economic Efficiency--Benefits do not exceed costs.
Employment and Income--Some temporary jobs.
Cost Effectiveness--Could have been done cheaper; could have been done vegetatively and with control.

Social Indicators

Participatory Approaches
User Group--None
Other Groups--None.
Leadership/Catalyst--None.
Women in Development--Some employment.
Extension/Local Training--None.
Demonstration Effects--None.

Institutional Indicators

Planning--Could have been done more cost effectively and with vegetative control.
Technical Assistance Strategy--Top down.
Funding Method/Timeliness--Standard HMG.
Technical/Professional Training--None.

Simpali Check dam

Technical Indicators

Environmental Impact--Did cut down on steepness of gully and reduce scouring.
Soil Loss--Not negative.
Multipurpose--Was single purpose.
Technical Appropriateness--Overbuilt structure.

Technical Effectiveness--Did cut gradient.

Economic Indicators

Economic Efficiency--Benefits less than costs.

Employment and Income--Some local people hired.

Cost Effectiveness--Could have done cheaper things and smaller, other protective measures possible.

Social Indicators

Participatory Approaches

User Group--Was persons idea, but didn't contribute voluntary labor; only one absentee landowner who hardly comes to area, no long term maintenance; idea of it is only good thing.

Other Groups--Not applicable.

Leadership--None, except considering the individual requester.

Women in Development--We don't know; but doubtful.

Extension Local training--None to insignificant.

Demonstration--May even be slight negative because of seeing poorly built structure; leaves impression that all you need is gully plug.

Institutional Indicators

Planning--Not good, but it was well designed and built right.

Technical Assistance Strategy--Not too good and not too bad; not long term.

Funding Method/Timeliness--Direct contract to local contractor.

Technical/Professional Training--None.

Lariung Drinking Water

Technical Indicators

Environmental Impacts--None.

Soil Loss--n.a.

Multipurpose--Only drinking water.

Technical Appropriateness--Well designed, poorly constructed.

Technical Effectiveness--Totally ineffective.

Economic Indicators

Economic Efficiency--Cost as much as it would have if it had been done right; benefits less than costs.

Employment and Income--Contractor; some of Narkot people were employed.

Cost effective--Most expensive way to do it, i.e.,
stupidly; will have to be rebuilt; could have
been done cheaper.

Social Indicators

Participatory Approaches

User group--Was involved but project was
unsuccessful; good idea; problem was that
there was a conflicting group.

Other Groups--Factionalism within the district.

Leadership--None.

Women in Development--Hasn't been successful in meeting
drinking water needs.

Extension Local Training--Lots of lessons could be
learned, but very little positive.

Demonstration Effects--Don't replicate.

Institutional Indicators

Planning--Well designed but not well-executed.

Technical Assistance Strategy--Positive since it came
from village; HMG accepted it; Institution
left locals to build it without help which
caused problem.

Funding Method/Timeliness--Not yet completed.

Technical/Professional Training--None.

APPENDIX 2
MINIMUM DATA SETS

ECONOMIC INDICATORS

1. Has income (cash) increased?
 - a) Personal
 - b) Village
 - c) Household
2. Has crop yield increased?
 - a) Can you now double or triple crop?
 - b) Able to grow different species & varieties?
3. Do have more "free" time?
 - a) Men
 - b) Women

- Are there any activities that now require less time?

 - a) Firewood collection
 - b) Drinking Water
 - c) Irrigation
 - d) Grazing & Fodder collection
4. Organizational benefits

Has village(r) become more aware of available government service?

 - a) Agricultural Extension
 1. Seeds
 2. Technical advice
 - b) Health -
 - Health care costs/services
 - c) WID
 - d) New User Association Developed?
5. Sustainability

Are any of the benefits going to disappear at end of project in July 1988?
6. Have women and men benefitted equally?
7. Any external benefits (to or from another village) e.g. downstream
8. Fuelwood/timber supply increased?
9. Livestock better yield/more weight (Goats, sheep, cows, buffalo)
10. Fruit seedlings on private lands

11. Private nurseries and income?
12. Tourism increased?
Income?
13. Fish ponds
 - Fish available
 - Diet substitute
 - Health benefits
14. Improved Stoves
 - Cause decrease fuelwood?
 - Cause improved health?
 - Women/Children
15. Training
 - Any for local people or only HMG officials?
 - Financial implications.
16. Trail improvement
 - a) Cause Tourism?
Income?
 - b) Cause time savings for daily work?
 - Fuelwood and Water collect
17. Employment
 - Before
 - a) During RCUP
 - b) After RCUP
 - c) Secondary
Nursery
Tourism
18. Has improved habitat caused wildlife for food?
 - a) Partridge
 - b) Quail
 - c) Wild Boar
 - d) Poaching?

TECHNICAL INDICATORS

1. How many days (women/men) spent in manual labour implementing field activity?
2. How many days (women/men) spent on middle-level (JTA) technical assistance?
3. How many days (women/men) spent on technical design, watershed planning and administration?
4. What is the amount and value of local materials used?
5. What is amount and value of outside materials?
6. What is the land use type, size and ownership?
7. What is the area of land protected or rehabilitated by gully control, landslide stablization, stream bank stablization?
8. Has value of land increased because of protection/rehabilitation?
9. Has erosion rate decreased and productivity increased?
10. How many kilometers of trail has been improved?
11. How many hectares of terrace has been improved & what is value of increased productivity?
12. How many hectares of watershed protection has been done for water supply.
13. How many catchment ponds (and size) have been built?
14. What hydrologic changes have been effected (volume, floods, low flow maintenance, sedimentation)?

FORESTRY INDICATORS

1. Number of hectares planted established as
PF HA
PPF HA
Private/No. of Farmers participating
2. General Watershed Condition
3. Rate of Change of Forest Area
From Ha/Yr to Ha/Yr
4. Rate of Change of Area Under
Shifting Cultivation Ha/Yr
5. Level of Awareness in the Target Population
6. Increment in Biomass /Ha
Govt Forest
Panchayat Forest
PPF
7. Innovative Trials
Nos
No. of Results Adopted by Line Agencies
No. of Results Adopted by Local People
8. Management Plans
No. Prepared
No. Followed
No. Adopted by Local People
9. Methods/Status of Protection Afforded
 1. Fencing Ha
 2. Guarded Ha
 3. Local Initiatives Ha
10. Travel Time to Fetch Fuel/Fodder
.... Hr on foot
11. No. of Active Grassroot Level Organization Created
12. Use of Flexible Elements of Project Design

13. Improvements Required in the Planning Process

- a. Are priorities right
- b. Are sequence of events well co-ordinated
- c. Are interdisciplinary acts well co-ordinated
- d. Is there integration in the field
- e. Is species site selection right
- f. Where in the Planning process is more input improvement required
- g. Organizational Aspects of Technical Input
 - i. Documentation
 - ii. Timely action
 - iii. Timely Supervision

14. Is There a Long Term Perspective In Planning Implementing Program

- 15. a. Is There Deviation from Target
- b. Is Target Setting Done from the Angle of People

16. Is The Technology Used Socially Adaptable

17. Are the Projects Completed and did they Produce Intended Outputs/Results

18. Transfer Of Know-How

- a. No. of people trained in
- b. No. of PVO/NGO Trained in
- c. No. of staff
- d. No. of Programs with Multiplier Effect

19. User Groups

- a. No. and Frequency of Meetings
- b. No. of Review Meetings
- c. Value of Input/Output

20. Identification of Alternatives

- a. Alternate to Fuelwood
- b. % of Area in Fast Growing Plantations

21. Quality of Technical Work Performed

Overall Evaluation

- a. Effectiveness
- b. Efficiency
- c. Significance (Sustainability)

22. Valuation of Technical Assumptions in Project Design

- a. What worked why?
- b. What did not work why?

23. What is the cause-effect relationship?

PARTICIPATION INDICATORS

1. PARTICIPANTS
Who they are Men Women
2. What Group?
3. Kind and Amount of Participation Number Average Value
Men Women Time Amount/Cost
 - a. Problem Item
 - b. Project Committee
 - c. Planning/Decision Making
 - d. Labour
 - e. Materials
 - f. Maintenance
 - g. Meetings
 - h. Evaluations of Projects
4. Exclusion of Certain Group
5. Factors that have fostered or limited participation
6. Priorities of People vs. Project Activities
7. Beneficiaries
 - i) Who are Beneficiaries?
 - ii) Specific Benefits No. of Beneficiaries
Men Women Average Value/Amt
Men Women
 (Actual & perceived)
 - a. Access to information
Extension, Literacy and
Training
 - b. Techniques to reduce drudgery
 - c. Employment
 - d. Salary
 - e. Access to Resources
 - iii) Exclusion of certain Groups
 - iv) Perception of equitability of distribution of benefit
 - v) Benefits perceived by non-participants

INSTITUTIONAL INDICATORS

Local

1. Membership, Number of meetings, Number of activities, Number of decisions made and executed.
2. Is the decision participatory
3. Are motives and interests appropriate
4. Degree of Specialization
5. Multiplier effect of activity
6. Longterm viability
7. Legal support for activities
8. Social acceptance (Qualitative)
9. Social justice in benefit sharing/equity
10. Effective role in extension at grassroot level (Awareness)
11. Inter-institution interaction
12. Replicability (Conclusion of 1 through 11)

Farmer's Training

Number of people trained

Men

Women

Number of people using training

Men

Women

Quality of training

Multiplier effect

APPENDIX 3

LIST OF PERSONS CONTACTED

1. Mr. Pradip Man Baisyet, DSCWM, MFSC, HMG
2. Mr. Nava Raj Baral, District Forest Controller, Gorkha District, Department of Forest, (DFC), MFSC, HMG
3. Mr. Baida Bahadur Basnet, Pradhan Pancha, Nareshar Village Panchayat, Gorkha District
4. Mr. Rudra Bahadur Basnet, former Pradhan Pancha, Ampipal Panchayat, Gorkha District
5. Mr. Karna Bahadur Belshare, Ampipal Village Panchayat Member, Gorkha District
6. Mr. Sushil Bhattarai, Acting Director-General, DSCWM, MFSC, HMG
7. Mr. Gyan Bahadur Bista, Member, Tuckche Irrigation Committee (TIC)
8. Mr. Rabi B. Bista, Chief Officer, Planning Section, MFSC, HMG
9. Dr. Veit Burger, Economist, Private Consultant, Kathmandu
10. Mr. Tom Catterson, Forestry Development Project Design Team, SRD, USAID/Nepal
11. Mr. Paima Chawang, Member Tuckche Irrigation Committee (TIC)
12. Mr. S.P. Dahal, Chief District Officer, Mustang District
13. Mr. Bishnu Hari Devkota, Vice-Pradhan-Pancha, Ampipal Panchayat, Gorkha District
14. Honorable Rastriya Panchayat Member Mr. Rajeshwor Devkota, Gorkha District
15. Mr. John Davenport, USAID/Nepal
16. Mr. Nutuk Dorge, Member, Putak Plantation Users Group
17. Mr. H. Jesse Dubin, CIMMYT, Kumultar Farm, Nepal
18. Mr. Marshall French, Country Director, CARE, Nepal
19. Mr. Purna Prasad Gauchan, Member, TIC
20. Ms. Reena Gauchan, ARD, USAID/Nepal

21. Mr. Yug Gauchan, Engineer, USAID Mustang District, Jomosom
22. Mr. Krishna H. Gautum, District Forest Controller, Dolakha District, MFSC, HMG
23. Mr. Lapsam Gelchan, Manager, Chharlo Tibetan Refugee Camp
24. Mr. Gan Bahadur Gurung, User Group Leaders, Putak Plantation, Mustang
25. Mr. Indra Bahadur Gurung, District Panchayat Chairman, Gorkha District
26. Mr. Nor Bahadur Gurung, Village Panchayat Member, Putak, Muatang District
27. Mr. Suka B. Gurung, Engineer, CARE, Pokhara
28. Mr. Bishnu Hirachan, Mustang District Panchayat Chairman, Jomosom
29. Mr. Krishna Lal Hirachan, Member, TIC
30. Mr. Bill Jackson, Extension Forester, Nepal Australia Forestry Project, Kathmandu
31. Mr. Bruce Jefferies, National Parks, FAO, Nepal
32. Mr. Mun Prasad Joharchan Member, TIC
33. Mr. Ratna Prasad Joharchan, Member, TIC
34. Mrs. Chandni Joshi, Chief of Women Development Section, Ministry of Panchayat and Local Development (MPLD), HMG
35. Mrs. Saloni Joshi, ARD, AID/Nepal
36. Mr. B.P. Kharel, Manager of Joint DSCWM/CARE Begnas Tal/Rupa Tal Watershed Management Project, DSCWM, MFSC, HMG, Pokhara
37. Mr. Raj Kumar Khakurel, RCUP Overseer, MSS, Gorkha District
38. Mr. Mohan P. Koirala, District Forest Officer, Mustang District, Dep't of Forest, MFSC, HMG
39. Mr. Shamsher Koirala, Ampipal Panchayat Member, Gorkha District
40. Mr. Gopal Jung Kunwar, Vice-Pradhan Pancha, Nareshor Panchayat, Gorkha District
41. Mr. Rauno Laitalainen, Team Leader, Forestry Master Plan, MFSC, HMG

42. Mr. Rajendra P. Lamichhane, Acting District Soil Conservation Officer, Mustang District, DSCWM, MFSC, HMG
43. Mr. James Lehman, Director, Peace Corps/Nepal
44. Dr. Burt Levenson, Project Officer, USAID/Nepal
45. Mr. George Lewis, Evaluation Officer, USAID/Nepal
46. Mr. Krishna B. Malla, Remote Sensing Center, MFSC, HMG
47. Mr. Yam B. Malla, Extension Officer, Nepal Australia Forestry Project, Kathmandu
48. Mr. Hem Lal Marhatta, Member Ampipal Panchayat, Gorkha District
49. Mr. Ram Chandra Marhatta, Secretary, Ampipal Panchayat, Gorkha District
50. Mr. Dhiraj Bahadur Maskey, Member, District Panchayat, Gorkha District
51. Mr. Govinda R. Mathema, Chief Conservator of Forests, Department of Forests, MFSC, HMG
52. Ms. Sara McCulloh, WID, USAID/Nepal
53. Mr. Pradip Nepali, Livestock Development and Animal Husbandry Officer, Gorkha District
54. Mr. Sher Onde, Village Priest, Putak, Mustang District
55. Mr. Gukul Raj Pandey, Western Regional Director, Department of Forests, MFSC, HMG
56. Mr. Larry Paulson, APCD, Peace Corps/Nepal
57. Mrs. Anjali Sherchan Pradhan, PDIS, USAID/Nepal
58. Mr. K.P. Prajapati, Dean, Institute of Forestry, Pokhara Campus, Tribhuvan University, HMG
59. Mr. Bharat Rai, IUCN, Nepal
60. Mrs. Kirti Rai, Women Development Office, Nareshor Panchayat, Gorkha District
61. Mr. Laxman L. Rajbhandari, Project Coordinator, RCUP, DSCWM, MFSC, HMG
62. Mr. Chet Bahadur Rana, Pradhan Pancha, Dungardi Village Panchayat, Gorkha District

63. Mr. Jivan Rana, Pradhan Pancha, Ampipal, Gorkha District
64. Mr. J.N. Rayamajhi, Assistant Dean, Institute of Forestry, Pokhara Campus, Tribhuvan University, HMG
65. Mr. Niranjana M.S. Regmi, ARD, USAID/Nepal
66. Mr. Stacy Rhodes, Deputy Mission Director, USAID/Nepal
67. Mr. Nick Roche, Forestry Advisor, SATA/Integrated Hill Development Project, Charikot, Dolakha District
68. Dr. Keshab M. Shakya, DSCWM, MFSC, HMG
69. Mr. Amrit Lal Sherchan, Pradhan Pancha, Tukuche Panchayat, Mustang District
70. Mr. Rudra Prasad Sherchan, National Panchayat Member (RP), Mustang District
71. Mr. Pasang Khampachhe Sherpa, Marpha Farm Manager, Ministry of Agriculture, HMG
72. Mr. Shiva Prasad Sharma, CDO, Gorkha District
73. Mr. C.D. Shore, District Livestock Development and Animal Husbandry Officer, Mustang
74. Mrs. Bhanu Shrestha, Women Development Office, Gorkha District, MPLD, HMG
75. Mr. K.P. Shrestha, Local Development Officer, Mustang
76. Mr. Mohan Lal Shrestha, Pradhan Pancha, Gorkha Town Panchayat
77. Mr. Henry Stennett, Watershed Management Project, FAO, Nepal
78. Mr. Mervin Stevens, Regional Community Forestry Training Center (RECOFTC), Kasetsart University, Bangkok
79. Mr. Ben Stoner, ARD, USAID/Nepal
80. Ms. Luxmi Subba, Women Development Office, Nareshor, Gorkha District
81. Mr. Kamal Bahadur Sware, District Inspector of Police, Gorkha District
82. Mr. George Taylor, Senior Forester, ARD, USAID/Nepal
83. Mr. Birendra Thakali, Member, TIC
84. Mr. An Bahadur Thakali, Member, TIC

85. Mr. Hari Thakali, Member, TIC
86. Mr. Path Bahadur Thakali, Secretary, TIC
87. Mr. Purna Lal Thakali, Member, TIC
88. Mr. Rhapke Thakali, Member, TIC
89. Mr. Japling Thakuri, Member Putak Plantation Users Group
90. Mr. B.B. Thapa, ^{Planning Officer, MFSC} ~~Women Development Section, MPLD, HMG~~
91. Mr. D.B. Thapa, Agriculture Development Officer, Mustang District
92. Mr. Rob Thurston, Chief, ARD, USAID/Nepal
93. Mrs. Gyanu M. Tiwari, Credit Users Group, WDS, Nareshor, Gorkha District
94. Mr. Simon Trace, Engineer, CARE, Pokhara
95. Mr. Indra Bahadur Tulachan, Chairman, Tuckhe Irrigation Committee (TIC), Tuckche, Mustang
96. Mr. Batuk Upadhya, Forester, USAID/Nepal
97. Mr. G. Keshari Upadhyaya, Assistant Soil Conservation Officer, Phewa Tal Watershed Management Project, DSCWM, MFSC, HMG
98. Mr. Gopal Upadhyaya, Soil Conservation Officer, DSCWM, MFSC, HMG
99. Dr. Michael Wallace, Environmental Resources Ltd., Kathmandu
100. Mr. Dave Wilson, Mission Director, USAID/Nepal

APPENDIX 4

LIST OF ACRONYMS

ADB	Asian Development Bank
ADB/N	Agriculture Development Bank of Nepal
ADO	Agriculture Development Officer
A.I.D.	United States Agency for International Development
ARD	Agriculture and Rural Development Office of USAID/Nepal
ARPP	Agricultural Research and Production Project
CCC	Catchment Conservation Committee
CCO	Catchment Conservation Officer
CDO	Chief District Officer
CIMMYT	International Center for Improvement of Corn and Wheat (Spanish)
DFC	District Forest Controller (formerly DFO)
DLDAH	Department of Livestock Development and Animal Husbandry
DOA	Department of Agriculture
DOF	Department of Forests
DSCWM	Department of Soil Conservation and Watershed Management
FAO	Food and Agriculture Organization (of the United Nations)
GON	Government of Nepal
HMG	His Majesty's Government of Nepal
IOF	Institute of Forestry
IRNR	Institute of Renewable Natural Resources (formerly proposed name of IOF)
IUCN	International Union for the Conservation of Nature and Natural Resources
JT	Junior Technician
JTA	Junior Technician Assistant
KMTNC	King Mahendra Trust for Nature Conservation
LDO	Local Development Officer
MFSC	Ministry of Forests and Soil Conservation
MOA	Ministry of Agriculture
MPLD	Ministry of Panchayats and Local Development
NAFP	Nepal-Australia Forestry Project
NCCR	National Council for the Conservation of Natural Resources
NGO	Non-Governmental Organization
PCRW	Credit Program for Rural Women
PDIS	Program Development and Input Support Division (USAID/Nepal)
PF	Panchayat Forest
PPF	Panchayat Protected Forest
PVO	Private Voluntary Organization
RCUP	Resource Conservation and Utilization Project
RECOFTC	Regional Community Forestry Training Centre (Bangkok, Thailand)
RFP	Request For Proposal
PP	Rastriya Panchayat (National Congress of Nepal)

SECID	South-East Consortium for International Development
SFDP	Small Farmer Development Program
TIC	Tuukche Irrigation Committee
UNDP	United Nations Development Program
UNHCR	United Nations High Commission for Refugees
USAID	U.S. Agency for International Development/Nepal
WDO	Women Development Officer (WDS)
WDS	Women Development Section (MPLD)
WID	Women in Development (AID)

APPENDIX 5

INSTITUTE OF FORESTRY: A CASE STUDY

The Institute of Forestry (IOF) presents a special case of RCUP circumstances and successes that needs to be examined on its own.

Background:

Historically, Nepal has trained its own technician level forest rangers at the Institute of Forestry in Hetauda, Nepal. Most professional foresters have received their training at the Forestry Research Institute and College (FRIC) at Dehra Dun, India. In 1978, the Institute of Forestry was transferred from the Ministry of Forest to the Ministry of Education, where it became part of Tribhuvan University. In 1981, the World Bank agreed to assist HMG in the construction of a new IOF. USAID/Nepal's initial involvement was carried out under the RCUP through SECID. To avoid confusion, it is worth noting that at one point a proposal to rename IOF the Institute of Renewable Natural Resources (IRNR) was made but never adopted by Tribhuvan University. However, some people still use the proposed name today.

Current Situation:

The World Bank completed construction of the new campus in 1986. The Pokhara campus is well located and very attractive. Facilities include classroom and laboratory facilities, a large, well-stocked library, housing for men and women and faculty, a small nursery, garages, and recreational facilities.

The IOF has already produced its first class of BSc graduates. The capacity of the new Institute at Pokhara is to produce 110 certificate level technicians and 30 BSc graduates annually. Ten percent of all slots are targeted for women. The Hetauda campus remains open, and will also provide training for 110 certificate level technicians per year.

Future:

In 1986, USAID/Nepal and HMG decided to create a separate IOF project. That project has been fully designed and is now in the Request For Proposal (RFP) stage. The contract will probably be awarded during the summer of 1988, and U.S. advisors should be in place before January of 1989.

The new project provides for more faculty training and for social forestry curriculum development. Current plans call for five faculty members to be selected for Ph.D. training and 15 more for M.S. level training. Additionally, two long-term U.S. faculty members will be stationed at IOF, and specialists will be

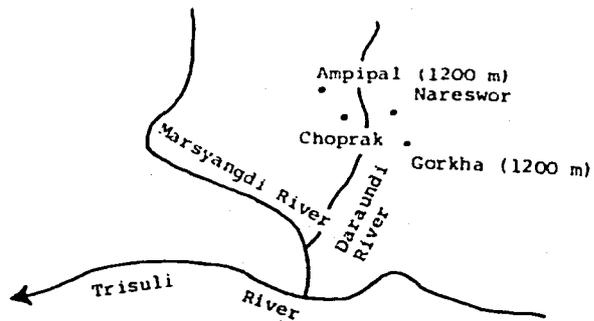
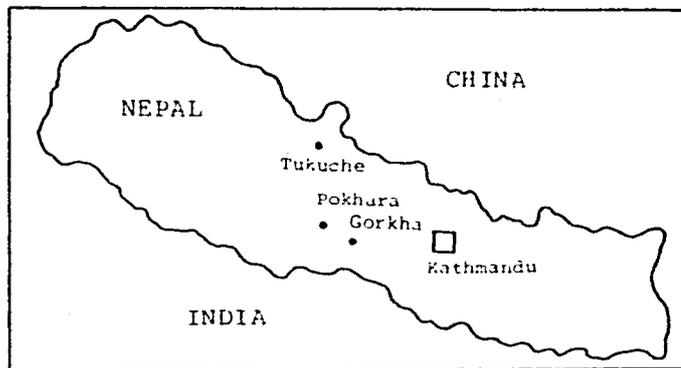
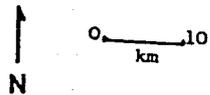
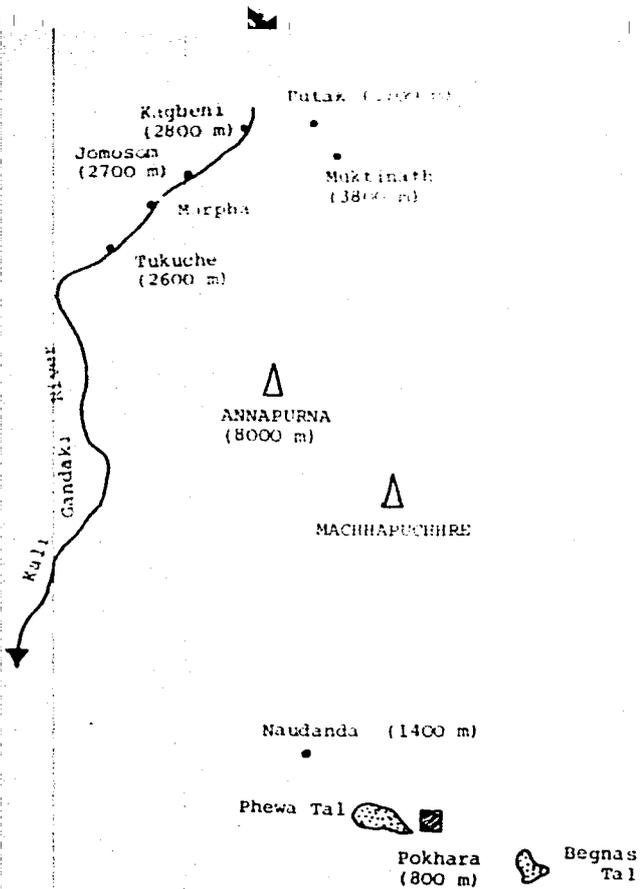
brought in, as needed, on a short-term basis. Social forestry will be a major part of the new curriculum, and one of the resident U.S. faculty advisers will be a social scientist. Under the IOF Project, USAID will initially contribute 62% of the annual operating expenses for the Institute. This share will gradually decrease over eight years when HMG will pay the entire amount.

Other proposed changes for IOF include expansion of the campus. Negotiations are currently under way to add a large, wooded area adjacent to the existing campus.

Evaluation of RCUP's Contribution to IOF:

The IOF component of RCUP has been very successful. Lack of trained manpower has been a constraint on natural resource management in Nepal. Under RCUP, fully half of the 30 faculty members at IOF have received advanced degree training, most at universities in the United States. Additionally, RCUP supplied the new campus with enough equipment and funding to begin operation. RCUP also collaborated with IOF on a paired watershed management experiment. Although this collaboration has been discontinued, it has set a good precedent for future field based research.

While problems remain regarding adequate laboratory equipment and financing for both students and faculty, the IOF has been a model of success from several aspects. The training of faculty members under RCUP has given the new IOF an unprecedented core staff from which to grow. It also represents a high degree of cooperation among HMG and donors. The World Bank and USAID utilized their comparative advantages to plan and implement two separate activities that were much more successful in total than could have been expected if either donor alone had tried to do both the building and the training aspects of the new Institute.



APPENDIX 7
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