NATURAL RESOURCE MANAGEMENT: A.I.D.'S EXPERIENCE IN NEPAL

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SUMMARY

The purpose of natural resource management in Nepal is to conserve land, forest, and water resources to maintain the ecological functions of these resources while intensifying agricultural and forestry production. Since l980, U.S. Agency for International International Development (USAID)/Nepal has invested approximately $77 million in seven projects designed to address natural resource management issues, particularly in the hilly regions of Nepal where most poor farmers live. The projects support farm-level research and extension activities as well as institution-building and training programs.

This paper reviews USAID/Nepal's efforts to deal with the issues that emerged during the implementation of the Rapti Area Development project and the Resource Conservation and Utilization (RCU) project -- the two largest projects in the Mission's agricultural development portfolio. The paper also describes how USAID/ Nepal is supporting multidonor strategies to deal with issues in the forestry sector that cannot be adequately solved by a single donor or the host country acting alone.

USAID/Nepal's experience offers several lessons that might be useful to other Missions just beginning to incorporate natural resource management activities in their development portfolios.

Multidonor Collaboration To Generate Host Country Support

A central question likely to influence long-term efforts to reverse resource depletion is how host country governments can be encouraged to address policy and related institution-building issues that affect the natural resource base. USAID/Nepal found that when it acted alone, its efforts to influence policy decisions were ineffective. However, primarily through its long-term investments in the Rapti and RCU projects, and several years of collaboration with other donors in sponsoring the formulation of Nepal's Forestry Masterplan, the Mission was able to raise policy issues and advocate policy changes favoring local management and private enterprise in the forestry sector. To encourage the Government of Nepal to effect such changes, the Mission is contributing to a multidonor project to strengthen the Government's institutional capacity to implement the Forestry Masterplan.

Starting a Natural Resource Management Program

The Rapti and RCU projects showed that when a large-scale project involves technologies that far exceed the host country's capabilities, its implementation can quickly turn into a management nightmare. More important, both projects demonstrated that technically sophisticated solutions are not always required. Rather, it possible, and in some cases advisable, to initiate

support for resource conservation activities by integrating research and extension activities into existing agricultural and rural development projects. Such activities could concentrate on developing low-cost, simple technologies that can be undertaken sustained by farmers individually or on a communal basis to improve livestock management, replant forests, and curb soil erosion on hill slopes and in catchment areas. Equally important, to gain the support of farmers, such activities should increase production of livestock and tree products without compromising food crop production.

Devolving Forestry Management to Local Communities

A key lesson from the Government of Nepal's decade-long program to devolve management of forestry resources to local authorities is that the process should not stop at the level of local government authorities. Rather, when planning reforestation activities, including the subsequent harvest and upkeep of restored forests, affected communities should be actively involved and their interests taken into account. The Government of Nepal is taking an important step in this direction by introducing legislation and economic incentives to encourage the formation of farmer groups with legal rights to restore and maintain public forests. A.I.D. and other donors are helping in this process by providing technical assistance to set up the legal and institutional framework for the formation of farmer groups that will undertake reforestation activities.

GLOSSARY

A.I.D. - U.S. Agency for International Development

CARE - Cooperation for American Relief Everywhere

CDIE - Center for Development Information and Evaluation

FINNIDA - Finnish Aid Agency

F/FRED - Forestry/Fuelwood Research and Development

ODA - Official Development Assistance

panchayats - Government administrative unit at the district and village level

PVO - private voluntary organization

Rapti - Rapti Area Development project

RCU - Resource Conservation and Utilization project

RDP - Rapti Development Project, Rapti II (second phase of the Rapti Area Development project)

terai - lowland regions in Nepal

1. NATURAL RESOURCE MANAGEMENT ISSUES AND THE DEVELOPMENT CONTEXT IN NEPAL

1.1 Introduction

The underlying question in natural resource management in Nepal is how to improve the management of land, forest, and water resources in order to maintain both the productive capacity and ecological functions of these resources. Nepal is hardly the only country where improving natural resource management is a development issue. However, during the past two decades significant loss and damage to forests, soils, and riverine systems in many areas of Nepal have led to widespread environmental damage and declining agricultural productivity, underscoring the urgency to develop practical measures to reestablish a sustainable agricultural production system.

The situation in Nepal is compounded by three factors. First, like in many low-income developing countries, the degradation of Nepal's natural resources is closely tied to unrelenting pressure exerted on limited arable land by a large and rapidly growing population, almost 90 percent of whom depend solely on agriculture for their livelihood. Over the past three decades, Nepal's high population growth rate has consistently outpaced the growth of the agricultural sector. Population growth has also resulted in the expansion of agricultural activities into marginally arable lands, causing rapid resource depletion and related environmental degradation. Therefore, any long-term effort to improve the management of Nepal's natural resources must be based on programs to increase agricultural productivity through intensified cultivation, rather than through expansion, and to curb population growth.

Second, until the late l970s, Government of Nepal development policies did not emphasize natural resource management issues. From the l950s through the early l970s, Government policies concentrated instead on developing power, transport, and communication facilities and on agricultural production in the Kathmandu Valley and the lowland region (terai). The Government's strategy was to increase food-crop production in the lowland region by adopting higher yielding crop varieties and by investing in irrigation facilities. In addition, the Government claimed ownership over forest resources and established a Government-owned forest-products industry.

However, during the late 1970s, the Government of Nepal became increasingly committed to promoting economic development in other parts of the country. The Government also became aware of the environmental degradation caused by clearing extensive tracts of forests for agricultural activity and by overcutting and overgrazing forests and shrubland adjacent to farming areas. In many localities, the forest cover needed to maintain an ecological balance had either been destroyed or

degraded to the point where natural regeneration was not occurring. Moreover, it had become clear that enforcing forest protection laws through legislation alone was virtually impossible. Therefore, the Government of Nepal began to take steps to reverse environmental degradation by supporting donor-funded reforestion and resource conservation projects and by addressing related policy issues. In short, natural resource management issues have only recently been incorporated into Government- and donor-sponsored development activities. In fact, serious attempts to deal with these issues began only in the 1980s. As a result natural resource management strategies and activities in Nepal are still experimental.

Third, the country's mountainous terrain, geographic diversity, and dispersed settlement pattern present formidable challenges for implementing development projects with infrastructure and service delivery components. The construction, operation, and maintenance costs of transportation and service networks in Nepal can be very high, especially in isolated regions of the country. Similarly, natural resource management approaches that rely on substantial investments in engineering works (e.g.. dams, river training structures, fences, and other physical barriers to protect forest lands or prevent land slides) can be very costly to implement and maintain. Therefore, the cost-effectiveness of natural resource management approaches in Nepal must be considered carefully by the Government of Nepal and the donor community.

1.2 Purpose of Study

Since l980, U.S. Agency for International Development (A.I.D.)/Nepal has invested $77 million in seven projects that deal with environmental concerns related to agricultural production and watershed management in the hilly regions of Nepal. The projects support farm-level research and extension activities as well as institution-building and training programs. In addition to these projects, USAID/Nepal has set aside a special fund -- Support for for Biological Diversity -- for activities related to wild-life conservation (see Project List in the appendix).

This paper reviews USAID/Nepal's efforts to deal with issues that emerged during the implementation of the two largest projects in the Mission's agricultural development portfolio -- the Rapti Development project (Phase I and II) and the Resource Conservation and Utilization (RCU) project. (The first phase of the Rapti and RCU projects have been completed.) Lessons drawn from the Mission's experience with these two projects might be useful for other small USAID Missions just beginning to incorporate natural resource management activities in their development program. The paper also describes how USAID/Nepal is participating in multidonor strategies to address forestry issues that cannot be adequately resolved by a single donor or by the host country acting alone.

This paper is the second case study carried out by

A.I.D.'s Center for Development Information and Evaluation (CDIE) in its review of how USAID Missions are addressing environmental and natural resource management problems in developing countries. The first study examined natural resource management in Rwanda and identified lessons from USAID Mission's recent efforts to support the Government of Rwanda's natural resource management program. The study on Nepal was undertaken as a collaborative effort with the World Bank Operations Evaluation Office, which is conducting a separate study to review the Bank's experience with environmental issues in Nepal. The World Bank study, which will be completed in 1990, cover the Bank's activities in all economic sectors. This paper will help the World Bank's study team to determine whether and how World Bank projects in Nepal took into account the lessons in environmental and resource management that had emerged from other donor experiences in Nepal. Other bilateral donors and the Asian Development Bank have contributed similar background papers on their experiences.

The information for this study was drawn primarily from documents on USAID/Nepal's activities, for example, Congressional Presentations, Country Development Strategy Statements, Project Papers, evaluation reports, and studies undertaken during the design or implementation stages of the projects.

2. OVERVIEW OF USAID/NEPAL'S SUPPORT OF NATURAL RESOURCE MANAGEMENT PROGRAMS

From l958 to l962, USAID/Nepal sponsored two projects -- Forest Inventory and Management project and the Forest Products Development project -- which trained Nepalese foresters and set up a Government sawmill enterprise to process timber culled from public forests. Although the sawmill proved to be financially viable, its future as a public enterprise became an issue toward the end of the project. The Mission was concerned that weaknesses in the management of the sawmill as a public enterprise might undermine its future development. USAID/Nepal recommended that the Government of Nepal consider turning the sawmill into a private enterprise. However, the Mission soon realized that it had little influence on the Government's intent to develop parastatals for the forest products industry.

No new forestry projects were launched during the l970s. The Mission's previous experience indicated that it could not influence Government policymaking nor did it approve of the Government's apparent lack of concern for the environmental impact of its development activities. The Mission therefore decided not to address "problems of controlling irrigation, the wasting of forest resources, and soil erosion" (Department of State 1974, 61). Instead, USAID/Nepal's development program in the 1970s emphasized support to the Government's agricultural and rural development program and health, population, and education projects.

In response to the Government of Nepal's policy shift in the late l970s, the Mission began designing the Rapti and RCU

projects, which became USAID/Nepal's biggest technical and institution-building investments in natural resource management in Nepal. The projects address forest and watershed management on public lands, livestock management improvement, and community-level reforestation and water management activities. Based in the Middle Hills regions, where most poor farmers in Nepal live, the two projects helped focus Government attention on specific land-use problems that affected the region's farming communities. The projects also helped the Government implement its policy of devolving responsibility to local government and farmer organizations for implementing the rural development program.

Since l985, the Mission has funded the second phase of the Rapti project and five smaller projects with natural resource management components. These activities range from research and extension programs to promote local resource conservation, to technical assistance to strengthen the Government's forestry-related higher education, research, and planning institutions. In collaboration with the Government of Nepal and other donors, the mission has also supported studies used to formulate the Masterplan for the forestry sector. USAID/Nepal's most recent project -- the Forestry Development project -- wll provide assistance for implementing some aspects of the Forestry Masterplan.

Except for the construction of small feeder roads and bridge trail construction to link farming communities to the national road network, the Mission did not invest in capital development activities.

3. ISSUES ADDRESSED BY USAID/NEPAL PROJECTS

3.1 Integrating Forestry With Agricultural Production Activities -- the Rapti Project Approaches

The Rapti I project was designed as the first phase of a 15-to 20-year integrated rural development project in support of the Nepalese Government's regional development program. The project covered five districts in the Rapti Zone, a remote hilly area of Nepal. The original project design had five components: local road building, social services, employment generation, crop varietal research, and technical assistance to help district and village panchayats develop the capacity to plan and implement local development activities.

During project implementation, it became clear that the original multisectoral project design was too complex to be effectively managed by USAID/Nepal and the Nepalese Government. Some activities (e.g., social services) were never implemented. Based on the recommendations of the midterm evaluation in l983 and the final evaluation in l985, the project objectives were narrowed to focus only on completing road construction and developing appropriate agricultural production technologies and

local institution building.

Both the midterm and final evaluation reports criticized the design of the project for not addressing the problem of deforestation in the Rapti region. The evaluation reports argued that, as in other heavily populated hilly regions in Nepal, forests in the Rapti Zone were degraded from overcutting by farmers and overgrazing by their animals. In many areas, the forests were no longer able to regenerate themselves.

Deterioration of the forests can have two significant economic impacts in Rapti. First, farmers can lose an important, if not their sole, source of fuelwood, fodder, and building materials. Second, degraded forests cannot adequately perform vital ecological functions, such as serving as water catchments and stabilizing soils on hill slopes, which will affect the region's water supply and soils, two resources crucial to agricultural production. In short, deforestation in Rapti could lead to economic disaster.

The evaluators recommended that the project include measures to restore and manage public forests on a sustainable yield basis. However, the measures cannot be based on prohibiting farmers from using the forests because such a strategy had not worked in the past and would deprive farmers of fuelwood and fodder. Instead, the project should encourage farmer involvement in reforestation and forest maintenance activities through the Government of Nepal's community forestry program; the project should also include a livestock improvement and management component to promote environmentally sound husbandry practices. These recommendations were adopted toward the end of the project and incorporated into the design of the second phase of the Rapti project -- the Rapti Development Project (RDP).

Under the livestock component, research and extension activities will focus on introducing better quality livestock and management practices. The husbandry practices will include stall feeding and selective culling of animals, controlling grazing on lands that are being reforested, and growing grass and other cover crops that can be used as fodder.

The community forestry program will encourage individuals and groups to plant trees on both private and public lands. The program will stock existing Government nurseries in each district with seedlings of tree species that can produce fodder and other products useful to farmers. Private nurseries will be given similar assistance. Technical assistance will be provided to establish a local institutional framework to strengthen district-level Government forestry offices and to organize participants.

Pilot activities will include organizing interested farmers into groups that will interplant trees with food crops (using an agroforestry system known in Africa and Asia as taungga) on land leased from the Government. The tenants will cultivate the land under technical guidance from Government extension staff who will be trained under the project. The tenants will have exclusive rights to the food crops they wish to grow on

the land. However, they will harvest fodder, fuel, and timber in accordance with a management plan mutually agreed on by the user group and the district forest office.

Extension services set up under the communal forestry program will provide tree seedlings for farmers to grow on their land. The objective is to provide the farm household with its own source of tree products, replacing or at least augmenting those normally obtained from nearby forests. Extension activities will be targeted especially to women farmers, since they are primarily responsible for tending livestock and gathering fuelwood and other tree products for household uses. Also, farmers will be encouraged to plant trees on their farms in configurations that will form vegetative barriers to curb soil erosion. Applied research supported by the project will concentrate on site-specific testing of tree species and agroforestry practices that will generate products for multiple purposes (e.g., fodder, fuelwood, mulch, medicinal use).

Since the two components are still being implemented, it is too early to assess their impact. Nevertheless, they constitute a key element of the RDP's development strategy to establish a more productive and sustainable agricultural production system in the Rapti Zone.

3.2 Watershed Management -- RCU Project Approaches

The RCU project was designed to develop watershed management systems that can be integrated with development activities throughout two large watershed areas. Project implementation began in l981 and ended in l988. The project support a range of conservation and development activities in three districts (Gorkha, Mustang, and Myagdi) located in two major watersheds (the catchment areas of the Kali Ghandaki and the Daraundi rivers). At the national level, the RCU project helped establish the National Commission for Conservation of Natural Resources and sponsored a staff training program in watershed and natural resource management for the Government of Nepal's Forestry Institute and Ministry of Forestry and Soil Conservation.

Three evaluations were conducted, in l983, l985, and l988 during project implementation. These evaluations focused on management and technical issues that emerged during project implementation. The recommendations of the evaluation teams were adopted during the last 2 years of the RCU project implementation and provided the basis for designing two new projects that began in 1987 -- the Forestry Institute and the Nepal Coppice Reforestation projects. The Forestry Institute project will develop a training program for community forestry and natural resource management (see Section 3.2.1). The Nepal Coppice Reforestation project is sponsoring silvicultural research at the national level to develop pruning and propagation techniques for certain tree species suitable for intercropping and reforestation purposes.

From its RCU project experience the Government of Nepal

gained insights into and information about forestry development and policy issues. These issues are summarized below.

3.2.1 Implementing an Integrated Approach to Watershed Management -- Institutional Constraints

The strategy of the RCU project was to use an "integrated approach" to design and implement conservation activities, which would not only protect the resource base but also complement existing farming activities. This approach was necessary because most hill slopes in the project area were intensively used for agriculture. Each hill slope typically supports three different agricultural activities: food crop cultivation on bottom land and terraced slopes; pasture production on steeper slopes; and harvesting forests and other natural vegetation for fodder, fuelwood, and lumber. Measures to restore degraded forests, curb soil erosion, control grazing, and develop water resources on the hill slop could affect more than one activity in the hill-farming. For example, measures to protect pastures by regulating animal grazing may require providing farmers with an alternative for sheltering and feeding animals. Failure to do so may result in farmers being forced to cut more fodder and trees to feed their animals, thereby exacerbating the deforestation problem. In short, implementation of integrated watershed management in the RCU project area required introducing a host of interrelated interventions to protect forest, soil, and water resources and to modify, if necessay, existing agricultural practices.

However, as with other failed integrated rural development projects in Nepal and in other developing countries, the RCU project experience indicated that without effective and well-coordinated institutional support, implementing an "integrated approach" over a large area is a difficult, if not impossible, task. In the case of the RCU project, it was virtually impossible to coordinate the field activities of the many line ministries involved in project implementation (nine different departments and agencies from four separate Government of Nepal ministries). Moreover, during RCU project implementation, the Government ministries were in the process of adjusting to the Government of Nepal's l982 Decentralization Act, which devolved responsibility for implementing the Government's development program to district-level offices of line ministries. Implementation of the RCU project field program was one of numerous local development activities that the district agencies were expected to handle with their limited financial and staff resources. Consequently, the agencies were ill-equipped to support RCU project field activities and to coordinate their activities.

Although the RCU project's training program addressed the issue of institutional weakness, it did not produce trainees until toward the end of the project. Nevertheless, the RCU project's training program was an important first step in addressing a major institution-building issue, that is, building a local capacity to implement the Government of Nepal's resource conservation program.

The l985 evaluation team alerted the Government of Nepal and USAID/Nepal to the fact that a separate and more substantial institution-building project would be necessary. This project would expand the training program already started under the RCU project to strengthen the Forestry Institute. The objective would be to establish a broader based training institution that, in addition to conventional forestry, would cover other aspects of natural resource management. In l987, USAID/Nepal and other donors sponsored a project to convert the Forestry Institute into a natural resource management institute. USAID/Nepal is funding a faculty training program and teaching curriculum for the Institute.

3.2.2 Developing a "Catchment Approach"

To overcome its institutional limitations and in response to evaluation recommendations to narrow its focus, the RCU project adopted a more practical approach to watershed management. This approach had three key elements. First, project activities were kept manageable by focusing on problems within the immediate catchment area of a river, rather than the larger watershed. (Previous RCU project activities were spread over the entire watershed and therefore tried to do too many things over too large an area.) Second, representatives of village panchayats and farmers' associations helped identify problems and organize farmers to implement project activities. Third, and most important, simple and low-cost technologies emphasizing the use of vegetation and local materials were introduced to curb soil erosion, control animal grazing, and conserve water resources within small catchment areas. These technologies included planting trees and grass strips to create vegetative barriers to control river erosion and to stabilize gullies and slopes prone to land slides, introducing fodder crops and stall-feeding practices to reduce livestock grazing on pastures, and building small-scale irrigation facilities. The final evaluation study found that a significant number of these technologies are technically appropriate, cost-effective, and require minimum maintenance by the local communities (USAID/Kathmandu l988b).

The technologies introduced by the RCU project are site-specific, and so might not be universally applicable. However, the project's experience underscored a lesson that was emerging in other projects, including Rapti and community-level projects being implemented in the Rapti Zone by CARE/Nepal and other donors (e.g., the Australian Community Forestry project). That is, low-cost, small-scale conservation activities that can be under-taken and sustained with private and taken and sustained with private and local initiatives to address specific problems in a catchment area are key to developing and implementing a natural resource management program. This approach is being used under a new USAID/Nepal project cofinanced with CARE, the Natural Resources Management project. The project will introduce resource conservation technologies to two remote areas, the Mustang and Solukhumbu districts.

3.3 Forestry Policy Implementation Issues

In the past decade, as reforestation projects were implemented, issues emerged concerning the Government of Nepal's forestry policy, community response, and the future development of the Nepal forestry sector. In particular, two issues have raised questions about the implementation of the Government of Nepal's reforestation program.

First, the investments in reforestation activities have yet to make a significant economic impact. Although many reforestation projects have been implemented, the actual area restored -- approximately 50,000 hectares -- is only a fraction of the 2 million hectares of forests used by farming communities and in need of restoration and proper management for production purposes. This finding indicates that more investments in community forestry projects will be required.

Second, equity issues related to the impact of community forestry projects alerted the Government of Nepal and donors to the inadequacies of using the district-level panchayat as the primary vehicle to plan and implement community-level reforestation activities. The interests of intended beneficiaries of reforestation activities -- local farming communities, including women -- were often ignored or inadequately represented in the forest restoration and management plans drawn up by district panchayats. Consequently, in many cases, farmers were understandably skeptical about the benefits of their participation and volunteered their labor simply to appease the panchayat authorities.

The unexpected cool response from farmers has raised concern that it would be difficult to generate sufficient voluntary labor to meet the estimated labor requirements of a nationwide campaign to restore community forests. The basic assumption of the Government of Nepal's forestry policy is that local communities will be willing to contribute the labor needed for reforestation activities. Moreover, the communities, rather than the Government, will be responsible for the subsequent upkeep of restored forests. Thus other measures -- besides vesting management authority to panchayats -- would be needed to generate more meaningful community participation.

In the past few years, the Government of Nepal and the donor community have sponsored pilot activities to encourage a more equitable representation of farmers' and women's interests in reforestation activities. The pilot activities will focus on organizing farmers and women into groups that will plan and implement reforestation activities. As an economic return for their labor, the groups will be given a share of harvested products. The community forestry and livestock management components of USAID/Nepal's RDP project are providing technical assistance to help with the formation of such groups.

In addition to the project-level interventions discussed above, donors began to collaborate on sponsoring a series of

studies to examine specific policy constraints on forestry development in Nepal. For example, USAID/Nepal funded two studies that recommended policy changes to encourage private sector investments in the forestry sector. The studies subsequently provided the basis for the Finnish aid agency, FINNIDA, and the Asian Development Bank to fund a project that formulated a Masterplan for the future development of the forestry sector. The Masterplan was approved by the Government of Nepal in l988.

By approving the Forestry Masterplan, the Government of Nepal reiterated its commitment to decentralize responsibility for the management of public forests not only to local Government bodies (the panchayats) but also to organized farmer groups (i.e., user groups) and private firms. {1} District and village panchayats will still be responsible for planning local reforestation activities and organizing local communities to restore and subsequently to harvest public forests. However, the Government will introduce legislation to permit panchayats to lease portions of forests under their jurisdiction to small, organized farmer groups. These farmer groups will use their own resources to restore and manage the leased forests on a self-sustaining basis. The groups will have legally protected claims to a share pf the forest products. The Government will also introduce legislation to permit private firms to lease public forests to establish forest enterprises.

The Government of Nepal plans to change major policies that have impeded the growth of market-based forestry development. Inefficient parastatal forestry enterprises will be privatized or dismantled. Restrictions on the internal trade and transport of forest products will be eliminated. The policy changes will be adopted as conditions for the World Bank's support of the Government's Structural Adjustment Program and for a multidonor project to assist with the implementation of the Forestry Masterplan.

Under the multidonor project, USAID/Nepal will provide technical assistance through the Forestry Development project to strengthen the capacity of the Ministry of Forest and Soil Conservation in three areas:

-- Training staff for forestry policy implementation and planning activities

-- Formulating legislation for the transfer of forest management authority to panchayats, farmer groups, and private firms

-- Developing a program to encourage local production of fuel-efficient stoves

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1 Remaining forest lands (inaccessible forests, wildlands, habitats of endangered wildlife, tourist sites, and tracts of Government forests set aside for fuelwood plantations) will be retained as protected forest reserves.

4. CONCLUSION

USAID/Nepal's experience in identifying and addressing natural resource management issues offers several insights pertinent to other USAID Missions that are developing strategies for incorporating natural resource management in their development portfolios.

The most important lesson concerns generating government support for policy changes and related institution-building activities to facilitate nationwide implementation of natural resource management activities. In Nepal, the central issue has been drawing Government attention to the inadequacies of its forestry development policy and investing in a long-term program to integrate reforestation and other resource conservation activities into the Government's development program. USAID/Nepal found that its efforts toward this end were ineffective in part because the Mission acted alone and because its development assistance to Nepal progressively dwindled over the past three decades. The Mission's contribution to total official development assistance (ODA) in Nepal dropped from an average of 77 percent in the l960s to 31 percent in the l970s and to less than 7 percent in the 1980s. In 1988, the Mission's contribution was only 3.8 percent of ODA in Nepal. Nevertheless, primarily through its investments in the Rapti and RCU projects, and its recent collaboration with other donors in sponsoring the formulation of the Forestry Masterplan, USAID/Nepal has helped to bring policy-related issues to the forefront, advocating policy changes that favor local management and private enterprise in the forestry sector.

Several lessons emerged from USAID/Nepal's experience in implementing the Rapti and RCU projects. The first concerns how to develop a strategy to address complex natural resource management issues, like deforestation and watershed management, whose ramifications might not be apparent during the initial project design stage. As a broadly defined, long-term agricultural and rural development program, the Rapti project design included a strong institution-building component aimed at developing extension approaches for fostering incremental changes in crop production practices. Therefore, when it became clear on both economic and ecological grounds that Rapti should address the problem of deforestation, there was no need to design a separate project. Instead the existing extension program was expanded to include activities to encourage farmers to adopt reforestation and live-stock management practices.

The RCU project framework, on the other hand, was focused on developing a new approach to watershed management -- integrating watershed management systems with development activities throughout two large watershed areas. The emphasis on technology development and wide geographic coverage proved inappropriate, given the lack of institutional support for implementing the field activities. Consequently, attempts to address institutional and other nontechnical issues by scaling down and confining the project's field activities to community-level interventions were inadequate. Although the project

succeeded in providing some training and infrastructure development and in developing community-level approaches to managing small catchments, it fell far short of attaining its original objective -- formulating a management strategy for environmentally sound development throughout the targeted watershed areas.

The RCU project's major contributions turned out not to be the few pilot demonstrations that could have been undertaken for far less than the $20 million spent on the project, but the identification of other needs in the Ministry of Forestry. These needs could not be addressed within the RCU project framework. Instead, new projects had to be designed to deal specifically with institution-building issues (e.g., through the Institute of Forestry project and the Forestry Development project). This project-by-project approach may not be cost-effective for Missions with a small development budget and limited staff resources, especially given that for each new project, money and time will have to be spent on the design process itself.

Second, the implementation problems encountered by the Rapti and the RCU projects caution against the temptation to start a natural resource management program with "big fixes." Both projects demonstrated that the implementation of large-scale projects involving technologies and approaches that far exceed host country capabilities can quickly turn into a management nightmare. More important, both projects demonstrated that technically sophisticated solutions are not always required. On the contrary, USAID/Nepal's experience shows that small-scale farm-level or community-level conservation activities can be undertaken with minimum technical assistance and subsequently managed on a self-sustaining basis.

Third, for USAID Missions with small development budgets, a program to promote natural resource management need not start with policy reform or large-scale institution-building projects. Instead, initial support can focus on resource conservation activities that can be integrated into existing agricultural and rural development programs. Such activities can concentrate on developing low-cost simple measures that can be undertaken by farmers individually or on a communal basis to improve livestock management, replant forests, and curb soil erosion on hill slopes and catchment areas. Apart from teaching farmers to conserve forest and soil resources, the objective would be to increase production of livestock and tree products without compromising food crop production. Research, policy, and institution-building issues arising from project-level experience can be dealt with separately in subsequent phases of the program, for example, in conjunction with other donors' projects dealing with the same issues.

Finally, problems with the implementation of the Government of Nepal's decentralized forest management program clearly indicate that the process of planning natural resource management activities (as well as other development activities that will affect local communities) should not stop at the level of local government authorities. The key lesson is that groups in the local population (especially women) affected by reforestation should be actively

involved in planning reforestation activities and in harvesting and maintaining the restored forests. The Government of Nepal is taking an important step in this direction by agreeing to introduce legislation and economic incentives to encourage the formation of farmers' groups that will be responsible for restoring and maintaining the forests. Pilot activities so far have yielded promising results, although the effectiveness of these measures in drawing genuine community support for reforestation will not be known for sometime.

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APPENDIX

AN OVERVIEW OF USAID/NEPAL PROJECTS WITH NATURAL RESOURCE MANAGEMENT COMPONENTS

Project	Implementation Years	Funding ($000s)
Rural Area Development-Rapti I	1980-1988	25,700
Description: Integrated rural development project that supported Government of Nepal efforts to devolve responsibility for implementing development projects to district-level authorities. The midterm evaluation identified a strategy to deal with deforestation and environmental degradation in the Rapti Zone. The project started a few pilot activities based on the recommendation.		
Resource Conservation and Utilization	1980-1988	27,498
Description: Project focused on forestry, erosion control and land use in two watersheds. Initiated community-level conservation activities in catchment areas within the watersheds.		
Agricultural Research	1985-1990	10,000
Description: Project supports a research and training program. The research is focused on hill farming systems, including agroforestry and livestock management.		
Irrigation Management	1985-1992	2,150
Description: Training in small irrigation systems maintenance and water use management, including assistance to water-users' associations.		
Institute of Forestry	1987-1995	8,700
Description: Project trains faculty and develops training curricula for forestry and natural resource management.		
Rapti Development PROJECT (Rapti II)	1987-1995	18,800
Description: Focuses on organizing farmer communities user groups to undertake intensified, environmentally sound crop and livestock		

production activities. Also includes a community forestry program.

Nepal Coppice Reforestation 1987-1990 2,125
Description: Application of coppicing techniques to propagate tree species.

Forestry Development 1988-1993 7,000
Description: Supports implementation of Government of Nepal's and Production Forestry Masterplan by strengthening Ministry of Forestry and Soil Conservation in three areas: planning, formulating legislation to facilitate transfer of forest management responsibility to local users and private enterprises, and developing a local industry to manufacture fuel-efficient cookstoves.

PVO Cofinancing 1988-1993 900
Description: Cofinanced project with CARE to introduce community-managed conservation activities to two mountainous areas.

Support for Biological Diversity (no-year) limit)
Description: A special fund -- up to $100,000-$200,000 per related activities.
year to support wildlife conservation and fuelwood production.

Research and Development (F/FRED)
A centrally funded project that has provided technical assistance for research and conferences on topics related to fuelwood production and multiple-purpose tree species.

Total investments in projects with natural management components amount to $77.173 million. (This figure excludes Rapti I).