FORESTRY IN ASIA: U.S. AID'S EXPERIENCE

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November 1986

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U.S. Agency for International Development
Washington, D.C. 20523

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EXECUTIVE SUMMARY

This is a review of early forestry efforts undertaken as part of AID's rural development portfolio in Asia. The experience of ten projects in India, Nepal, Sri Lanka, Thailand, Philippines and Indonesia are described in terms of institutional, technical, community participation and design issues.

The performance of social forestry and upland agroforestry projects has been mixed with some significant advances in natural resources management. The projects have successfully disseminated large numbers of tree seedlings to rural people. The survival and integration of these trees into farming systems is not well known, but appears to be occurring to some extent. The most significant progress is ~~in the strengthening~~ of forestry and natural resource management institutions. Many field activities did not meet expectations, partly due to overly ambitious targets. The agroforestry efforts in the Philippines, Indonesia, Thailand and Nepal have made considerable progress in introducing soil conservation measures to rural people. The establishment of community woodlots and managed forests on public land has generally proceeded slower than expected, because of the difficult process of policy reform.

Forestry as supported by AID in Asia represents a growing commitment to natural resource management, a commitment that is unavoidable if previous advances in agricultural and rural development are to be maintained. Almost all of these first projects are leading to follow-on activities, demonstrating the continuing interest by Asian countries and by USAID Missions. In several cases, other donors have stepped in to build on the firm foundation established by AID.

The newer AID projects in Asia reflect some of the experience of earlier projects, but some recurring problems are not adequately addressed. Among the institutional issues are problems of cooperation between agriculture and forestry agencies. The traditional roles of these agencies and conflicts over land jurisdiction have affected the implementation of every forestry effort initiated by AID in Asia. In addition, forestry institutions have exhibited a poor capacity to absorb foreign assistance funds and to manage large-scale field activities. Training programs require priority treatment in the early stages of projects and project management often needs to be decentralized.

Despite the varied conditions and goals of social forestry and agroforestry efforts in Asia, there are several common technical issues. Sites for woodlots and species trials are often unsuitable. Introduced tree species are frequently not well matched to site conditions and local people's needs. A major lesson is that a fuelwood deficit at the state or national scale does not indicate that there are sufficient incentives for local people to plant or manage fuelwood trees. The traditional role of trees in

farming systems and existing patterns of forest exploitation are often poorly understood in project sites and lead to false assumptions regarding local people's needs. The existence of accessible markets for tree products and reliable sources of seeds or seedlings are of paramount importance to the long-term success of forestry programs. The biological and economic risks associated with relying on monocultures of exotic tree species are usually overlooked and may incur high costs to rural people in some areas. Technical assistance from U.S. forestry experts has proven inadequate for addressing this range of problems and more expertise should be drawn from the ecological and social sciences.

There is an incomplete transformation of forestry departments from their traditional regulatory role to one devoted to providing rural development services. In response to continuing difficulties, some AID projects are now shifting their emphasis to improving the agroforestry capabilities of existing extension services and to working with local government offices. This approach is not always possible, however, because forestry departments have jurisdiction over a remarkable proportion of land in Asia. More importantly, deforestation and destructive land uses are occurring at such a rapid rate that formal extension systems must be aumented by the active involvement of trained local leaders and non-governmental organizations. The cost effectiveness of expanding government extension services versus alternatives using the private sector has not yet been weighed carefully by AID. On the other hand, some USAID's are already starting to devote attention to private tree nurseries and reforestation of degraded lands by private voluntary organizations and commercials firms.

Incentive systems to encourage rural people to plant trees have had mixed success. The rigid adherence to planting targets have consistently inhibited local people's role in project planning and implementation. The failure to recognize the social and economic context in which local people make their land use decisions has resulted in some unsuccessful experiments with subsidies. The most promising approach used by upland agroforestry projects is the coupling of immediate economic benefits from participation in project activities with the demonstration of tangible medium and long-term benefits from agroforestry practices.

The lack of legal land tenure is not an insurmountable obstacle to community participation, but measures are needed to provide indisputable land use and tree harvesting rights in order to spur local people's involvement. The slow progress of AID projects on public land reflects the reluctance of government agencies to relinquish their power over land and forest management. Projects in several countries illustrate the significant effect policy dialogue can have for stimulating more commitment by governments to policy reform, as exemplified by the land use certificate programs in Thailand and the Philippines.

Some projects suffer from a conflict between goals, one of increasing farmer income and the other of promoting sustainable natural resource use. Trees are expected to fulfill both functions, but both goals cannot be simulataneously maximized. Several projects are concentrating on increasing rural income but have uncertain prospects for long-term viability. The original rationale of social forestry as a means of overcoming serious rural energy shortages has lost its attractiveness because the causes of destructive land use practices are more complex than originally perceived by project planners. Unfortunately, increasing farmer income from tree products may not resolve the persistent problem of fuelwood collecting in forest reserves.

Project monitoring and evaluation have proved inadequate for most of the social forestry and upland agroforestry projects. This has prevented more than superficial assessments of project impact on natural resource conservation and insufficient flexibility to improve institutional and technical arrangements. The experimental nature of the forestry efforts has placed an extra management burden on USAID staff and they are relying increasingly on contractors and short-term technical advisors from AID/Washington.

Despite these difficulties, the AID forestry efforts in Asia have the potential to make substantial contribution to natural resource management in Asia and to guide the investments of other donors. The growing forestry portfolio in Asia, in spite of a decreasing AID budget and staff resources, demonstrates a long-term commitment to natural resource management in the region. In order to strengthen the existing portfolio and to improve the design of future projects, the following are recommended: 1) a regional analysis of the forestry extension experience in Asia; 2) more investment in applied research; 4) specific attention to inter-agency cooperation; 5) more policy dialogue concerning natural resource management issues; 6) greater participation by the private sector; 7) a phased approach to project implementation; 8) more technical assistance from ecologists and social scientists; 9) improved monitoring and evaluation; and 10) greater emphasis on tree product marketing.

PREFACE

This report was part of my American Association for the Advancement of Science (AAAS) Diplomacy fellowship at the Bureau for Asia and Near East, U.S. Agency for International Development (AID/ANE). I worked under Robert F. Ichord's supervision in the Division of Energy and Natural Resources of the Office of Technical Resources (ANE/TR/ENR).

Among my responsibilities were monitoring Asia forestry and natural resource projects, including participating in project meetings, policy discussions and responding to congressional requests. I also handled routine requests from the AID country offices (USAID's or Missions) and coordinated activities with the Bureau for Science and Technology (AID/S&T), especially projects managed by the Office of Forestry, Environment and Natural Resources (S&T/FENR). This included helping manage the Asia component of the Forestry/Fuelwood Research and Development project (F/FRED) and acting as a liaison for the Forestry Support Program, a technical support office funded by S&T/FENR.

Another important part of my fellowship was visiting USAID's and assisting with specific bilateral programs. During two trips totalling three months, I was able to travel to Thailand, Indonesia, Bangladesh, Nepal and the Philippines, as well as to participate in a conference in Malaysia. The fellowship provided international travel funds which were in some cases augmented by USAID and AID/W program funding. This allowed me to visit a number of agroforestry and social forestry projects and to discuss issues at length with USAID staff. The trips to Asia and responsibilities at ANE/TR/ENR also introduced me to forestry officials from almost every Asian country.

My gratitude goes to all those at AID who took the time to share information with me and to listen to the opinions of a visiting human ecologist. I am specially indebted to Robert Ichord for encouraging me to become involved in all aspects of technical work in his office and for extending the fellowship two months so that this report could be completed. He was also very instrumental in developing the concept for this report and identifying important issues to examine. The content of the report, however, remains entirely my responsibility and does not reflect official AID policy.

1. INTRODUCTION

This is an analysis of the first generation of Agency for International Development (AID) projects in Asia that use forestry to promote rural development. Forestry is used here in its broadest sense of rural forestry activities involving the planting and/or management of woody perennials, including social forestry, agroforestry, watershed management and wood energy plantations. The terms social forestry and agroforestry have different meanings in different countries. In this report social forestry refers to the establishment and maintenance of woodlots and managed forests for the benefit of rural communities. Agroforestry refers to intercropping trees and agricultural crops, including alley-cropping and hedge-row contouring. I use the phases "community forestry" and "rural forestry" to encompass all efforts to promote tree planting by local people as part of a rural development program. Some of the projects have modest tree planting components but their explicit attention to soil conservation merits their inclusion.

My main objective is to identify common experiences of different Asian countries during the implementation of AID/ANE's (Asia and Near East Bureau) first efforts in rural forestry. I give particular attention to institutional, technical, extension and project design issues. The report is primarily designed as a reference for AID but I try to avoid obscure "AID" language so that it may also serve a broader development audience.

The analysis is based on recent project evaluations, although I also draw from published reports, discussions with project officers and field visits to some sites. The first section describes the Asia forestry portfolio and the projects which fall within this review, with a synopsis of project evaluations. These descriptions are drawn almost entirely from AID documents. This section provides some detail regarding the agroforestry, soil conservation and woodlot elements of the projects because I discovered that USAID staff in one country were frequently unaware of innovative experiments by their neighbors.

Subsequent sections examine specific issues by drawing examples from the projects. Reference is also made to concrete steps different Missions have taken to cope with different problems. In these sections I refer to some of the recent literature on community forestry, although this report is primarily concerned with the particular lessons the AID forestry projects offer. The implications of AID's forestry experience in Asia are then discussed in light of the newer projects that are underway or are being developed. The role of the AID Washington offices (AID/W) is then examined. The final section summarizes my recommendations.

2. AID FORESTRY PROJECTS IN ASIA

2.1 Overview

In the late 1970's, AID began to respond to growing public alarm over tropical deforestation and fuelwood shortages. The first projects in Asia with a major emphasis on these problems were initiated in 1980 after several years of preparation and design. This was a departure from earlier, industrial forestry efforts during the 1950's and 1960's (see Braatz, 1985). The return to forestry in the 1980's reflects AID's "New Directions" mandate from Congress to work with the "poorest of the poor" so that forestry became an integral part of the rural development program.

The Asia region quickly dominated AID's forestry program and now equals about one half of all expenditures for forestry projects. Most projects involve field activities where rural people are provided assistance for tree planting and management. The Asia projects address several key problem areas (Table 2.1 lists all major projects since 1980).

Social forestry efforts in India and more recently in Pakistan, focus on replanting degraded lands and establishing small plantations for fuelwood, fodder and household forest product needs. Most of the social forestry projects are in lowland areas, in contrast to other projects focusing on upland watershed management. The social forestry program in India alone represents about one half of the Asia portfolio in terms of expenditures, but upland agroforestry and watershed management projects are more numerous. These projects incorporate tree planting as part of larger efforts to stabilize land use on erosion-prone hilly land. Trees are used to protect soil and water resources while also increasing farm production and the supply of fuelwood and fodder. The early upland projects followed an integrated rural development approach, engaging a variety of sectors and government agencies to tackle a large range of conditions causing rural poverty.

AID is also involved in a wood energy program in the Philippines using tree plantations for commercial energy production. This review will not examine this project and others similar to it because they are being considered under a separate rural energy review.

Forestry research, education and institutional strengthening are another emphasis for AID in Asia, particularly the expansion of extension programs. Many projects with field activities also have substantial research and training components. More recently, this has become the focus of two regional projects, the ASEAN Watershed Management and the Forestry/Fuelwood Research and Development (F/FRED) projects. USAID missions in several countries are now

TABLE 2.1

AID projects in Asia with major forestry components. The starred projects are reviewed in this report. Funding levels reflect initial amounts listed in project papers for entire project and do not indicate actual expenditures.

Country	Status	Duration	Funding (Mill.)	Contractor
Bangladesh				
Homestead Agroforestry Research and Development (388-0062)	Planned	1987-92	17.0	------
India				
*Madhya Pradesh Social Forestry (386-0475)	Active	1981-87	25.0	none
*Maharashtra Social Forestry (386-0478)	Active	1982-90	30.0	none
National Social Forestry Support (386-0495)	Active	1985-90	83.5	(2 PCS's)
Forestry Research, Education and Training (386-0488)	Planned	1987-91	5.0	-----
Alternative Energy Resources (386-0474)	Active	1982-88	5.0	Winrock
Indonesia				
*Citanduy II (497-0281)	Active	1980-86 (ext. to '87)	27.0	RMI
Upland Agriculture & Conservation (497-0311)	Active	1984-90	18.9	DAI, Winrock
Nepal				
*Rural Area Development Rapti Zone (367-0129)	Active	1980-85 (ext. to '87)	26.7	PADCO

*Pe and

Table 2.1/Cont.

Country	Status	Duration	Funding (Mill.)	Contractor[1]
Institute of Forestry (367-0154)	Planned	1987-92	9.8	------
Hill Forestry	Planned	1988-93	10.0	-------
Rapti Development	Planned	1987-94	20.0	--------
Pakistan				
Forestry Planning and Development (391-0481)	Active	1984-?	30.0	Winrock
Philippines				
*Rainfed Resources Development (492-0366)	Active	1982-89	14.0	DAI
Sri Lanka				
*Reforestation and Watershed Management (383-0055)	Active	1980-87	14.7	SECID
*Mahaweli Environmental Protection (383-0077)	Active	1981-87	5.0	U.S. Dpt. of Interior
Thailand				
*Mae Chaem Watershed Development (493-0294)	Active	1980-87	10.0	none
*Renewable Non-conventional Energy Development	Compltd	1979-85	5.0	(none for woodlot act.)
Regional				
ASEAN Watershed Management (498-0258)	Active	1983-88	3.0	U.S. Forest Service expert
Forestry/Fuelwood Research & Development (936-5547) (Asia regional:498-0276)	Active	1985-94	40.0	Winrock

Table 2.1/Cont.

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RMI= Resources Management International
DAI= Development Alternatives International
Winrock=Winrock International
SECID=Southeast Consortium for Internation Development

designing new projects primarily directed at forestry institutional development. Almost all the bilateral agricultural research projects in Asian countries include agroforestry components.

Projects are sometimes an element of borader mission policy dialogue with the host country on national resources, including natural resource inventorying, remote sensing, environmental profiles, national park planning and related land use planning mechanisms.

2.2 India

The USAID forestry portfolio in India is the largest bilateral forestry program in the agency. Support for lowland social forestry began in 1981 with the Madhya Pradesh project and in 1982 with the Maharashtra project. The Madhya Pradesh project focuses on community plantations on public land while the Maharashtra project emphasizes tree planting by farmers on private lands. The Alternative Energy Resources project has a woody biomass component involving research on fast-growing trees for energy production.

More recent forestry initiatives by USAID/India include co-financing of the National Social Forestry project with the World Bank. In addition, an agroforestry subcomponent to the Agricultural Research project was recently designed. In response to an appeal by the Prime Minister Rajiv Gandhi, USAID is helping send senior instructors from all the state agricultural colleges to the United States to study forestry curricula and teaching methods. A major new project, Forestry Research, Education and Training, will be designed during the 1987 fiscal year.

An interesting feature of the two early social forestry projects was the lack of an external contractor, reflecting Government of India's reluctance to use foreign technical assistance. Two U.S. personnel service contractors (PSC's) are now hired under the National Social Forestry project and the woody biomass research component of the Alternative Energy Resources project is being contracted to Winrock International as part of the regional Forestry/Fuelwood Research and Development project.

Madhya Pradesh Social Forestry Project (MPSF)

The goal of this project was to "increase the supply of firewood, fodder, fruit, small timbers and other minor forest products." A major purpose of MPSF was to build the state institutional capacity to encourage rural people to manage community plantations on government and public lands. Main components of the project were to: 1) establish plantations on

government and public lands near villages, along roads, railroad tracks and canals; 2) establish an extension wing in the Madhya Pradesh Forestry Department called the Social Forestry Directorate (SFD); 3) provide tree seedlings to farmers to plant on privateland. Major emphases were districts with severe fuelwood deficits where 80% of the trees planted were expected to used for fuelwood. The project called for a staff of 3300 at SFD, of which 1800 would be extension personnel. Mixed plantations totalling 63,450 ha were planned, 75% of which would be community forests on public or government lands.

A second mid-term evaluation was conducted in December, 1985. It raised serious questions about the way MPSF has been implemented and recommended major restructuring and rethinking of the program. Many of the same issues were raised in the initial mid-term evaluation, conducted November 1983. Because of these persistent problems, it is unlikely that MPSF support will be continued beyond the 1986 fiscal year.

One major problem has been the poor prospect for transferring plantations established by SFD over to panchayat (village or cluster of villages) management because of economic and legal disincentives. The original project design called for plantation plans to be cooperatively developed with panchayats to work out these problems of land use, common properly resource management and the distribution of output. Confusion and uncertainty have remained about community rights to harvest trees on government land and suitable arrangements for distributing produce to the poorer segments of communities. This situation, combined with the failure of SFD to demonstrate in a tangible way the economic costs and projected benefits of these plantations, has translated into community unwillingness to assume responsibility for them.

Community participation in the project has remained elusive and the leadership of SFD has been inconsistent and weak. Another problem has been obtaining land for plantations which is not too degraded for cost-effective reforestation. Disputes between government agencies about their jurisdiction over public lands have exacerbated these problems. No effective means have existed to resolve such conflicts without strong leadership from senior officials and a better commitment by the state forestry department.

Most of the technical assistance anticipated by USAID remained unused and SFD personnel were not acquiring sufficient technical and extension skills. Socio-economic aspects of the program were neglected and meeting quantitative targets for tree planting commanded the most attention and resources. Coordination between SFD and other extension programs was poor and the existing scientific community in India was not being tapped.

One of the more successful components of the project has been the provision of tree seedlings to farmers for planting on privately owned land. In 1984, 9.3 million tree seedlings were distributerd to farmers free of charge and in 1985, another 13.3 million. The evaluation recommended that farmers be charged nominal amounts for seedlings and that the cost-effectiveness of the government-run nursery program be reviewed. Stimulating private production of seedlings was suggested as a possible means of decreasing people's reliance on government nurseries.

Maharashtra Social Forestry Project (MSF)

The MSF project had the same general goal as the Madhya Pradesh project, to increase the supply of firewood, fodder, fruit and small timber in rural areas. The rationale was that community tree planting will reduce the rate of deforestation and increase rural income. The eight-year effort emphasized developing the institutional capacity of the Horticulture and Social Forestry Department (H&SFD) that could provide assistance to rural communities to establish demonstration plantations in each village and to stimulate tree planting on uncultivated patches and borders of private land. Among the project components were: 1) strengthening and expansion of H&SFD forestry extension, including the part-time employment of 4,300 villager motivators, one for each of the project villages; 2) 9-10 hectare community plantations in each of the 4,300 villages for demonstration purposes; 3) the distribution of about 20,000 tree seedlings to individuals in each village for planting on farms, field borders and homesteads. A major emphasis was the development of local community capacities for long-term management of the plantations. After an initial three-year period, the plantations would be turned over to each community to manage.

The mid-term evaluation, completed in October 1985, found that the Maharashtra project experienced no major problems and indeed was exceeding initial expectations. This conclusion contrasts the difficulties encountered in the Madhya Pradesh project. In particular, targets for both community plantations and private tree planting have been met and often exceeded. The seedling production from government, non-profit institutions and private individuals increased steadily from 1982, reaching over 30 million in 1985. Private plantings covered 20,000 ha by 1985 and planting on public and government lands covered 17,000 ha. Despite their lack of experience in extension, forestry officers were able to stimulate enthusiasm in rural communities for tree planting. The evaluation also noted, however, that more attention to training H&SFD personnel in extension and management skills was necessary.

Among the recommendations was the need for more attention by H&SFD to operational and organizational aspects of the program to ensure its long-term sustainability. This included more village responsibility for plantations based on management plans developed as a collaborative process between H&SFD and local people. Studies of plantation production rates under different soil and environmental conditions were also recommended. This was part of the strong endorsement in the evaluation of more monitoring of project activities to ensure sufficient feedback to organize project management in the most effective way. The evaluation recommended an analysis of the impact of regulations and policy on forest product trade, as well as a detailed study of tree product market conditions and the long-term implications of tree planting on prime agricultural land.

The evaluation observed that more effort was needed to involve disadvantaged socio-economic groups and participation of women. Training women as extension officers, village motivators and tree nursery managers was recommended. The role of government-managed nurseries was questioned as a possible disincentive to village-based private enterprises. Another issue was the distribution of products from community plantations. The evaluation proposed H&SFD develop several alternative distribution models for communities without becoming directly involved in the enforcement of such systems.

Minor revisions in the MSF project were recommended. These included an adjustment of planting targets from a proportion of 50:50 of community land to private land to one of 40:60. The adjustment reflects the actual pattern in many villages, where farmers plant more trees on private land and suitable community land which is not assigned to other uses is difficult to obtain. This conforms with the successful adoption experience in Gujarat and Uttar Pradesh under the World Bank's earlier social foreestry projects. The evaluation also urged closer adherence to the original project design which emphasized activities to improve the long-term sustainability of social forestry efforts, such as infrastructure construction, technical assistance, training and research. Although Government of India expenditures have exceeded amounts targeted for the project, the funds have been devoted almost exclusively to tree planting activities and not to these other categories.

2.3 Sri Lanka

USAID/Sri Lanka was the first donor to respond to the government's concern for meeting domestic energy needs and halting rapid deforestation and environmental deterioration. In 1980, the five-year project Reforestation and Watershed Management was approved. Unlike India, this project was Sri Lanka's first venture

in social forestry and represented a pioneering effort by USAID. Two years later, the Mahaweli Environment project was initiated to address specific wildlife conservation and resource management needs identified by the environmental impact assessment of the Accelerated Mahaweli Program (AMP).

Long-term involvement by USAID in Sri Lanka's forestry sector is not likely in part because of the overwhelming number of assistance programs in forestry launched by other donors since 1980 such as the United Nations Development Program (UNDP), the World Bank and the Asian Development Bank (ADB). Another factor may be the difficulties experienced by USAID with its first forestry project.

Reforestation and Watershed Management Project (RWMP)

The purpose of this project was to conserve and stabilize critical upper watershed in the highland regions of Sri Lanka. Another emphasis was on the improvement of the resource base for renewable energy and commercial. The major project components were national forestry training, strengthening research, developing an extension service in the Forestry Department, plantation establishment and fire control. RWMP was designed to strengthen the Forest College at China Bay through technical assistance and training as well as construction of facilities at the College. Substantial training of Forestry Department personnel was also envisioned in the areas of reforestation and forest management, research, extension and fuelwood plantation management.

The mid-term evaluation was prepared in December, 1984. This was after the project was amended in 1983 to increase the overall budget, and shift more of the financing to USAID and to extend the project to July, 1987.

The evaluation revealed many difficulties with the project, some reflecting the political and economic disruption caused by national ethnic conflicts. Although planting targets were not met, the essential goal of the project, to strengthen the forestry institutional capacity was succeeding. Most of the difficulties were associated with unforeseen budgetary and political problems in Sri Lanka, the low absorptive capacity for project funds by the Forestry Department and procurement and contracting delays.

The evaluation also pointed to serious problems with meeting construction and planting targets, technical assistance provided by the U.S. contractor (SECID, the Southeast Consortium for International Development) and the general inability of the Forestry Department to accomplish the revised (1983) project objectives given their budgetary and staff conditions. The field activities were

especially problematic, with many losses of tree seedlings due to unanticipated drought and fire. Unfortunately, the evaluation team was only able to visit the Upper Mahaweli catchment, as the northern and eastern regions of the country had travel restrictions imposed due to terrorist activities.

Planting fuelwood trees was planned for 35,000 acres of degraded dry land and the reforestation of 24,000 acres in the upper Mahaweli catchment. To supply the two plantations, nurseries were envisioned to produce a total of eight million seedlings annually at each of the sites. This program was inhibited by the lack of a consistent Chief-of-Party from the contractor, overly brief visits by consultants, and poor exchange of information on forestry activities within Sri Lanka. The fire control program suffered from a lack of a fire detection and suppression plan.

The training program in general proceeded well, although some of the targets were unrealistic given staff shortages at the Forestry Department. Also, the U.S. contractor used one U.S. university too exclusively for long-term training and scheduled short-term training study tours inconveniently because large numbers of staff could not participate at the same time. The research program also had difficulties, partly because the Chief Research Officer was assigned project administration duties so that the U.S. contractor undertook most of the short-term studies rather than Sri Lankan researchers.

The extension program showed good prospects but the Forestry Department needed more assistance with extension techniques, particularly the development of school nursery programs, coordination with agricultural extension and outreach to women.

Mahaweli Environment Project (MEP)

This project was conceived after an environmental impact assessment of the Accelerated Mahaweli Program (AMP). AMP is a multi-donor effort to develop a large river basin through the construction of dams along the Mahaweli river, irrigation infrastructure and the resettlement of rural communities.The purpose of MEP was to "ensure the stability of irrigated agricultural development and human settlements in the AMP area by providing alternative protected habitats for displaced wildlife in a manner that is ecologically sound and socially acceptable." Specific project elements were the development of four protected areas, totalling 182,000 ha with park infrastructure including buffer zones, rehabilitated habitats, roads, park buildings and signboards. The buffer zones around the parks were envisoined as sources of forest products and fodder for nearby villages.

Another element was the strengthening of the Department of Wildlife Conservation's (DWLC) planning and management system by expanding personnel to 225, providing technical assistance for the preparation of management plans for the park system and the decentralization of park administration. The improvement of DWLC research and training capabilities was another component, which focused particularly on the establishment of a Wildlife Conservation Unit (WCU) to survey and manage the wild elephant population as well as training and public education.

Through an interageny agreement, the U.S. Park Service was contracted to provide technical assistance. The project included a modest program to reforest wildlife reserves with native tree species. A non-profit organization, Nation Builders, was contracted to undertake this task under DWLC supervision. Nation Builders had both volunteers and minimum wage laborers totalling 3,000, two-thirds of whom were women.

The mid-term evaluation of MEP was completed in December, 1985. The project had experienced major problems, especially in the development of buffer zones, habitat enrichment and the construction of infrastructure. Many of the difficulties stemmed from limited DWLC capability in project administration, contracting problems and a poor operational plan for site development. The traditional regulatory role of DWLC was difficult to overcome and little technical expertise from other Sri Lankan institutions, such as universities, was drawn upon. There was also weak coordination between DWLC and the AMP implementing agencies. Efforts to train DWLC personnel and the legal establishment of the protected areas were more successful. The upsurge of insurgent activity within the project area had a major impact on the project.

The forestry aspect of this project is minor, but the evaluation is included in this review because of the use of a private voluntary organization (PVO) to undertake reforestation. The evaluation notes that Nation Builders was successfully replanting wildlife reserve areas, with 317 acres already planted with native tree species. They produced one million seedlings for future plantings, but delays in project administration prevented planting them during the wet season, delaying reforestation efforts by one year. Complaints by local Veddah people were raised that Nation Builders was underpaying them.

2.4 Nepal

The AID program in Nepal has a growing emphasis on natural resource management. In 1980, two projects were initiated that apply a multi-sectoral approach, including forestry, to problems of sustainable land use. The Rural Area Development-Rapti Zone project

(Rapti) was designed to focus efforts on a remote region of Nepal encompassing four districts in the Hills and one in the Terai valley. The Resource Conservation and Utilization project (RCUP) explicitly focused on watershed protection in Hill districts and institutional strengthening at the national and local level. At the same time, the USAID mission funded a smaller project, Agricultural Resource Inventory, to establish a remote sensing center in Nepal for natural resource inventorying and planning with particular attention to forests. In 1984, the Agricultural Research and Production project was initiated which has a substantial agroforestry component.

USAID/Nepal is in the process of designing three new projects with important forestry components. One will be a follow-on to the Rapti project involving fewer sectors. About 50% of the activities will be related to agroforestry and natural resource conservation. RCUP will have two follow-on projects. One will help strengthen the Institute of Forestry's capabilities in training, education and research. The Hill Forestry project will limit field activities to a few small catchments in order to develop better capabilities and techniques for integrated watershed management.

The Mission is also interested in a broader set of forest-related topics It is sponsoring a study of how to improve private sector involvement in forest management and is engaged in forestry policy dialogue and donor coordination efforts. A recent congressional earmark has resulted in a new research project devoted to coppicing trees, which will be managed by AID/W.

Resource Conservation and Utilization Project RCUP

The goal of RCUP was to promote soil protection and restoration within the context of land use in the hills by the rural poor. The project involved a field program, originally for four large watersheds, construction of 174 buildings, and education and training. A complex, multi-sectoral project, RCUP had 17 components, involving 4 ministries (including numerous agencies and institutions within them) and Tribhuvian University. SECID was selected to implement the project and had assisted with project design.

The forestry component of RCUP had three different elements. One was the promotion of tree planting, including community woodlots, by farmers in watershed areas. Another was the development of community management plans for using panchayat forests and panchayat protected forests for local wood and fodder production. Third, RCUP promoted the development of a national forest program. Targets included the establishment of nurseries,

planting 2,130 hectares, delineation of 7,513 km of forest boundaries, distribution of 493,100 seedlings, land management plans for 58,968 ha of national forest and for panchayat protected forests.

The project also provided for the development of an Institute of Renewable Natural Resources (now referred to as the Institute of Forestry, IOF) at the Pokhara campus then under construction by the World Bank. This institute would expand the capability and outreach of the existing Institute of Forestry at Hetauda campus to produce qualified technical staff, extension agents and professional natural resource management experts.

In 1983 RCUP had a special evaluation and then in October, 1985 an impact evaluation was prepared. The project progress was reviewed by AID/W several times while considering no cost extensions. Presently, the project is extended until July 1988.

Because of the complexity of RCUP, the 1985 evaluation had both high praise and serious criticism of project elements. Overall, however, the evaluation found RCUP significantly improved Nepal's capabilities in forestry and natural resource management. The complexity of the project made the formulation of an operational plan with clear objectives very difficult. The involvement of so many line agencies made the goal of an integrated approach unachievable. The underlying concept of watersheds as large management units was not practical.

The number of qualified staff within the Ministry of Forestry and Soil Conservation (MFSC) was insufficient for implementing the project. The evaluation noted that the ambitious construction schedule and the Institute of Forestry training programs detracted from field activities, although these two components were proceeding satisfactorily. Indeed, training and development of the IOF were seen as a major positive force for natural resource management in Nepal.

In the three districts of the project, general awareness by rural people of natural resource management was increased. However, local participation in activities was often very poor. The development of panchayat forest management plans by local communities was a case in point. These efforts were also constrained by legal and political conflicts over usufruct and ownership rights to community and government lands. The success of many field activities was difficult to assess because the project had no effective monitoring system, despite repeated insistence by the Mission.

In terms of the watershed field component, the evaluation found that several of the activities had high technical merit (these included terrace improvement, floodplain plantations, panchayat

nurseries and plantations). Some trees were lost in flooding and there was a tendency for plantations to be located where natural vegetation would already regrow easily if the land was protected. Most forestry field activities fell considerably below their targets. The evaluation pointed to the ambitious nature of these targets given Nepal's terrain and serious understaffing in the Department of Forest and the Department of Soil Conservation and Watershed Management. Additional problems were over-investment in costly fencing and labor and poor site and species selection. A two-year delay in the start-up of forestry activities created an extra urgency to meet targets and this severely curtailed local people's participation. Supervision by central staff, including site visits, and reliable reporting of field activities were lacking.

The evaluation recommended that the remaining activities be managed directly by USAID/Nepal staff following the expiration of the primary contract for RCUP in July 1986. A scaled-down field program focused on a few small catchments was proposed to develop a better capability and approach to integrated watershed management. Continued support for the IOF was viewed as critical.

Rapti Zone Rural Area Development Project

The goal of the Rapti project was to increase the income, agricultural production and general quality of life of rural people residing in the middle hills of western Nepal. A primary objective was to improve the availability of national programs in agriculture, health, education, resource management and family planning. This was within the context of Nepal's increasing decentralization of such services. A multi-sector approach was envisioned with assistance in training, technical support, infrastructure construction, rural credit and equipment. Implementation of major elements of the project was contracted to SECID.

Project components related to forestry included establishing horticultural tree orchards to increase food production, stabilization of erosion-prone lands through tree planting and other measures, improving tree seedling availability by establishing village nurseries, small farmer contract reforestation of degraded land, and demarcation and planting of community woodlots for fuelwood and fodder production. The Rapti project had elements similar to RCUP such as demarcation of national forest land, tree species trials, large nursery establishment and planting along roads.

Rapti had a special evaluation in 1983 and an impact evaluation in October 1985. This project experienced even greater difficulties than RCUP in terms of overcomplexity and the lack of integration of field activities. The evaluation viewed the management structure as fragmented and actual achievements well below expected. On the

other hand, the evaluation found significant progress in the strengthening of local institutions' capacity to undertake development efforts and in the availability and use of national programs and services in the Rapti Zone.

The forestry activities had a very slow start, and the Department of Forest's capacity to promote community reforestation and management of existing forests was very weak. A major issue was the practical rate of expansion in forestry versus the scale of effort needed to conserve water and soil resources in this zone, on the order of six times the rate of actual tree planting. Particularly unsuccessful were efforts to stimulate community-based management of existing forests, partly due to technical weaknesses of forestry staff and to local perception of forestry officers as enforcers of government rights to lands rather than as helpers in rural development.

Among the technical difficulties were inappropriate tree species selection, inadequate seed quality control and improper nursery maintenance. Survival rates of planted trees ranged between 62-71%, but these were estimates based on incomplete data. Government nurseries exaggerated their claims of seedling distribution and the monitoring of forestry activities was generally poor.

Achievements in the Rapti project included the development of community management plans for some panchayat forests and protected panchayat forests. Training of forestry personnel and an increased rate of nursery and plantation establishment were also accomplished. The evaluation urged more emphasis on extension education and community involvement with the planning and implementation of forestry activities. The involvement of the private sector, women, Peace Corps and coordination with other donors were also proposed.

2.5 Thailand

Early forestry efforts in Thailand included a village woodlot program as part of the Renewable Nonconventional Energy project in 1979. The next year, the Mae Chaem Watershed Development project was initiated. This was aimed at stabilizing land use practices in upland areas of Northern Thailand. Subsequently, the Northeast Rainfed Agriculture Development project was started, which included a small village woodlot and tree seedling dissemination component.

USAID/Thailand has continued to take a special interest in natural resource management as a primary area for support, even as the overall portfolio is being substantially reduced. Evaluations of both the Renewable Energy and Mae Chaem projects are currently

underway with particular attention to community participation, economic sustainability, and natural resource conservation. Under the Emerging Problems of Development II project, USAID has funded a natural resources profile undertaken by the Thai Development Research Institute (TDRI). An assessment of the national park system, with guidance from the U.S. National Park Service, has also been sponsored. There are plans for designing a new natural resource management project which may include a forestry component. TDRI, with a small level of technical support from USAID has developed a proposal for a two-year study to analyze existing deforestation trends, policies which affect patterns of forest use and forestry research and training needs. In addition to bilateral activities, Kasetsart University outside of Bangkok is the headquarters of the regional Forestry/Fuelwood Research and Development (F/FRED) project centrally funded by AID/S&T and AID/ANE.

Mae Chaem Watershed Development Project

The objective of this seven-year project was to increase the income of the rural poor and their access to government services while protecting soil resources and restoring vegetation cover on the Mae Chaem watershed. The project was planned as a multi-sectoral effort, using a phased approach that slowly expanded activities to more districts within the watershed. The focus was on landless poor who had encroached on public forests for shifting cultivation, with a strong emphasis on local community participation and bottom-up planning. Approximately one half the target population were hill tribe minorities and there were concerns about reducing the opium planting in the region.

One project component was delineating and developing land suitable for permanent agriculture and providing irrigation where possible to increase land productivity. This involved the issuance of land use certificates by the Royal Forest Department (RFD) in order to provide landless poor with the incentive for long-term management of soil and water resources. Support programs emphasize improving local people's access to government services by having both a coordinating management unit and interface teams. Another support element was training farmers and the construction of a training and meeting center. Extension services of the Ministry of Agriculture and Cooperatives (MOAC) were provided by 15 extension agents and 5 agronomist supervisors. Applied research and the establishment of an agricultural research station were planned to develop production systems appropriate to the ecological conditions and socio-economic needs of the local people. Market access was to be facilitated by improving roads. Another project component was environmental protection and management by initiating forest fire control, road rehabilitation and erosion control, and experimental village woodlots covering approximately 120 hectares.

This project was extremely experimental in several ways. Community participation was facilitated by interface teams (IF), composed of three persons with no ties to any government agency representing both sexes and at least one ethnic minority. From the Northern Thailand region, the IF were composed of young, highly-motivated people with college-level education. They were assigned to the most "neutral" agency, National Agricultural Development Center (NADC). Fifty-five IF were to live in different villages and communicate to villagers what government services were available to them. In turn, the IF were responsible for communicating to government agencies the conditions and needs of the rural people and for coordinating extension services.

Considerable delays were experienced during first two years because the RFD failed to comply with the condition precedent that stewardship certificates would be issued to landless farmers. USAID placed a freeze on project funding for one year until this condition was met. Other delays were caused by centralized project management and poor communications between line agencies. The project director was based in Bangkok while a field manager of lower rank from NADC was located in Chiang Mai. This made project decision-making reliant on communications with Bangkok rather than being responsive to local conditions, as envisioned in the project paper. Financial arrangements were unwieldy with too much authority based in Bangkok among four departments within the Ministry of Agriculture and Cooperatives (MOAC). USAID was able to convince the MOAC permanent secretary in 1982 that alternative arrangements were necessary. The provincial governor was appointed project director and he appointed a deputy who was highly respected and well-known in the region. Subsequently in 1983, the director of NADC was appointed project director for technical affairs.

For these reasons, little field implementation took place by the time of the first evaluation in July, 1983. USAID is planning an impact evaluation during FY87. Among the issues raised by the first evaluation were the continuing confusion over which of the many project objectives should take priority. Slight rescheduling of the project stages was recommended with two districts dropped altogether from the scope. Further decentralization of the project operations was stressed and a revitalization of meetings which included district officers from all the relevant line agencies. The special line agency units set up to implement the project complicated coordination and reduced the potential for sustainability beyond the life of the project.

The evaluation noted the IF teams were successful at introducing local community considerations into the project planning process, an opinion which was also expressed by the USAID project officer in late 1985. The IF teams were seen as specially effective at helping villagers initiate self-help projects. For example, 18

unofficial rice banks were established and working well compared to the failing of a government-operated bank. Data collection by the IF teams on local ecological and socio-economic conditions were viewed as impressive. They were able to mobilize villagers to participate in the project, particularly hill tribe communities. The IF teams expanded into more operational and technical project roles than expected, and the evaluation recommended more training be provided to them. The sustainability of project activities initiated with the impetus of IF teams was not assured, and the evaluation provided detailed recommendations for ensuring a careful phase-out.

The village woodlot activity began with a rocky start because of the freeze on USAID funds. The evaluation questioned the economic soundness of the woodlot approach in areas where natural forest remained nearby. An important conclusion was that major changes in rates of erosion and water run-off should not be expected to result from the project. Significant declines in the rate of deterioration were possible, but a reversal of trends would require at least 15-20 years of effort. It was recommended that one expatriate advisor be provided whose expertise was management systems of complex projects, with several short-term advisors to help refine project monitoring, environmental assessment of watershed conditions and training.

Renewable Nonconventional Energy Project (RNE)

The village woodlot component of the RNE project was designed to demonstrate and study the techniques of planting fuelwood species for providing a sustainable source of wood energy for communities in the Northeast Thailand. The project was undertaken by the RFD in coordination with the National Energy Administration, which had lead responsibility for the entire RNE project.

The woodlot component included five elements: training, silviculture, economics, land use and utilization. A specific emphasis of the project was the improvement of the institutional capabilities to propagate fuelwood species, develop criteria for selection of woodlot sites, identify socio-economic factors affecting village participation, establish appropriate management and silvicultural systems for woodlots and to establish demonstration woodlots. Field activities were carried out in seven provinces and an extensive survey was undertaken to indicate villager tree preferences and household and small industry use of wood and charcoal.

A preliminary report of the performance of this project was prepared by the National Forest Land Management Division of RFD (RFD, 1984). A more comprehensive evaluation of the RNE is

currently underway, with considerable attention to the village woodlot component. A special UNDP-World Bank team, after conducting a preliminary review of this project, decided to design a new project based on the positive results of the woodlot activity.

According to the RFD report, a major accomplishment of this activity was the estaolishment of 6,000 rai (1 rai = 6.25 ha) of woodlots in seven provinces. There were approximately one million seedlings distributed were and an extensive educational and training program was carried out. Several studies were completed by the RFD, including site criteria for woodlots, a sociological study of community perceptions, and an assessment of the socio-economic conditions of four provinces. The researchers selected Eucalyptus camaldulensis as the exclusive species to be used and planting began in 1981. Nearly 86% of the total area was public land and the remainder consisted of temple and school grounds. Most of the field planting was conducted by provincial forest rangers, who grew most of the seedlings. Different management regimes were investigated, including intercropping trees and crops and small plantations. Some preliminary surveys were undertaken to examine the demand for fuelwood and charcoal, appropriate public lands for community woodlots, and local perceptions of the benefits and risks of participating in the program.

The report does not address any possible problems RFD anticipates for woodlot management and product marketing by local communities. The underlying assumption is that if communities are willing to plant the trees they will also be able to manage and benefit from them. Little information exists on how these woodlots have fared since reaching maturity, as the preliminary evaluation by RFD was undertaken only three years after trees were planted. The project is regarded as highly successful because such a large area was planted by local communities with only a modest expediture.

2.6 Indonesia

Indonesia was one of the first Asian countries where AID became involved in upland agroforestry and watershed management. The interdependencies between the irrigated lowlands of Java and the uplands have long been evident because of the extreme population density of the island. The emphasis of USAID projects is on increasing agricultural production by small-scale farmers on private land. The Citanduy I project in Java was devoted to integrated river basin development. In the late 1970's, several pilot sites were established in the uplands to develop better soil conservation and upland agriculture techniques. One of the pilots was successful at reducing the rate of erosion while increasing agricultural production. This early experience was used as a model for the design of Citanduy II. Citanduy II devoted more resources to

improving upland farming systems in addition to assistance with irrigated lowland rice production. The experience of this project and that of other donors has led to the start of another project in 1984, Upland Agriculture and Conservation (co-financed by the World Bank). Agroforestry is also among the practices promoted by the Provincial Area Development Project which assists local governments to undertake rural development activities, particularly in the eastern provinces.

Institutional strengthening of provincial forestry colleges and agroforestry research are supported as part of the agricultural research portfolio of the Mission. The Asia regional AID forestry advisor was based in Jakarta until that position was eliminated. USAID/Indonesia has also provided small-scale assistance to Environmental Study Centers and to agroecosystem analysis efforts.

Citanduy II

This six-year project was initiated in 1980 in both the lowland and upland zones of the Citanduy river basin of West and South Java, one of the most densely populated river systems in the world. Initial interest in the area was inspired by political instability there, as well as by occasional flooding. Applying an integrated rural development approach, the project emphasized strengthening local government planning and management at the district, provincial and national levels and the participation, through a coordinating committee, of the agencies of three ministries. The goal was to sustain and improve the productive capacity of the basin by increasing agricultural production and resource conservation using the entire basin as one planning unit. The project was to be managed by local government with the participation of line agencies for technical support.

Citanduy II had two discrete components, improving irrigated rice production in the lowlands and increasing rainfed agricultural productivity and resource conservation in the uplands. A model, or demonstration, farm approach was used with extension teams assigned to each one. The introduction of terracing, new crop varieties and other inputs was subsidized for the model farms. Neighboring farmers in the "expansion areas" were encouraged to form 10 ha groups for terracing purposes. They were required to contribute their labor for constructing the terraces and received, at no charge, grasses to plant on the risers. Trees were be provided at nursery cost for land steeper than 50%, as well as seeds for crops used in the model farms. Credit was made available for purchasing fertilizer, insecticides, sheep and goats.

The watershed component encompassed the establishment of a field research station and a training center. Training was planned for 250 government staff, village conservation technicians and farm

leaders. Other project activities were the establishment of 150 demonstration plots, five large nurseries, a rural credit program, bench terracing, 300 km of access roads, reforestation of 42,800 hectares and erosion control measures.

In January 1985, the Mission assessed the status of the project several studies, including an impact evaluation of the Panawangan area, the original upland pilot which inspired many elements of Citanduy II and the Ministry of Forestry's Regreening Program. Other studies examined the soil and climatic characteristics of project sites and the socio-economic conditions of participating farmers.

Citanduy II was successful at spreading land use techniques which substantially increase farmer income while reducing the rate of erosion, although the economic evaluation of the cost effectiveness of this process was not possible because insufficient data were gathered. In the uplands, 1,157 ha of subsidized expansion occurred with an additional 4,017 ha of land about to be subsidized, as well as an unknown amount of spontaneous, unsubsidized expansion. The benefits to farmer income varied substantially, with the earliest project area (Panawangan) achieving a 450% increase in gross farmer income. However, the total area of expansion farms was below project expectations and community involvement in project planning was not well facilitated. The tree planting program followed the Ministry of Forestry's conventional Regreening approach rather than than planned emphasis on higher value trees. The location of demonstration sites was based more on physical characteristics than on socio-economic or local planning considerations, thus the success of the model farms was uneven.

Major problems were experienced with this project due to the complex and centralized management system. The project entailed 25 different distinct activities implemented by three different ministries. This complexity doubled when the Department of Forestry split from the Ministry of Agriculture to become a ministry itself. In addition, the boundaries of the basin did not coincide with local political authority, so that two provincial governments and five districts were involved in project implementation. There was poor coordination between line agency technical planning and the local government, which had to implement the plans and all other project activities. For example, the Watershed Management Development Center (of the Ministry of Forestry) developed plans for upland model farms, but the local government had to implement them and the plans did not accommodate their schedule for other development activities. Serious constraints were experienced by local government, line agencies and USAID in terms of their administrative capacity to cope with all the project activities.

The USAID assessment noted that a major technical weakness of this project was insufficient research to develop sustainable upland farming systems. The project's greatest failure was the lack of improved institutional capability to conduct integrated watershed management or to advance the state-of-art in upland farming systems. Although socio-economic research was recognized as important for guiding the introduction of new technologies, research was substantially delayed and not well conceived to assist the planning process. This prevented a thorough evaluation of project assumptions, particularly the validity of using farmer subsidies and credit to spur adoption of soil conservation measures such as terracing. Other basic questions that remained unanswered were the major sources of soil erosion and flooding in the Citanduy watershed. This made it impossible to estimate the economic value of decreased erosion on project sites.

The Citanduy II project was recently extended for two more years, ending August 1988. A scaled-down program will involve further expanding the number of model farms, testing agricultural technologies for steep slopes and shallow soils and the continuation of training and institutional building. Particularly important will be the activities of the Socio-Economic Research Unit. This research center will assist with local government planning and will facilitate the analysis of lessons learned. An agro-climatic resource inventory will be applied to the project planning and implementation process. The extension will include assistance to farmers to set up private nurseries for grass stock and tree seedlings as the government nurseries have not been able to produce sufficient plant material.

2.6 Philippines

The USAID program in the Philippines has a strong emphasis on the management and development of rainfed resources, particularly critical upland areas. An early forestry effort was associated with the Bicol Integrated Area Development project, a large irrigation and waterworks scheme. Started in 1979, this project included assistance to protect the watershed of the Lake Buhi through the introduction of agroforestry and the reforestation of public land. Recently, an analysis of natural resource use in the Lake Buhi region was undertaken using an agroecosystem approach. This resulted in a workshop for local government officials and residents and the development of a plan which includes improved watershed management.

Since the early 1980's, the PVO Co-Financing project has supported a number of community-based agroforestry initiatives and studies. For example, the Kalahan Education Foundation received support for its grassroots agroforestry work and the Asia Foundation

undertook an analysis of fuelwood supply and demand. USAID has also supported a strong program in research related to improving upland agricultural technologies such as the Farming Systems Development Project in Eastern Visayas.

In 1982, the core of USAID's natural resource management efforts was initiated in the form of the Rainfed Resources Development Project (RRD). This project specifically addressed the problems of natural resource planning and land use in the uplands. During the same year, the Rural Energy Development project was launched. This effort included plans for fuelwood and charcoal production and the establishment of fast-growing plantations by local communities for use in a dendrothermal power plant. The forestry elements of this project have subsequently been scaled back for security reasons, technical difficulties and the changing energy situation.

Rainfed Resources Development Project (RRD)

The purpose of RRD was to develop institutional capacities and a policy framework to support community-based land and water resource management in settled upland forest, rainfed agricultural areas and coastal zones. One component was resource monitoring and policy analyses by the Ministry of Agriculture and the Ministry of Natural Resources. This component called for an assessment of trends in renewable natural resource use, as well as for policy analysis of issues such as land tenure in forest reserves, priorities among competing land uses, pricing policies for forestry and agricultural products and financially sound ways to maintain and protect upland watersheds.

Another component was the support for the Philippine Council for Agriculture and Resources Research and Development (PCARRD) for "biotechnical" research related to the needs of small-scale producers in settled public forest, rainfed agricultural land and coastal zones. A unique element of this research was the establishment of a RRD steering committee to set the priorities and criteria for funding research proposals. The field component of the project, the decentralization of upland resource management and supporting a range of new strategies that were more responsive to local needs. A major element was Agroforestation Program Development managed by the Bureau for Forestry Development (BFD) Upland Development Working Groups for pilot agroforestry activities initiated by BFD. The RRD field component also strengthened rainfed farming systems management by conducting on-farm research in Bicol and Eastern Visayas. This involved improving the capability of the Ministry of Agriculture to undertake a decentralized research program that actively involved local farmers.

An important concept behind the design of RRD was the continual flexibility to redesign project components. In September 1983, the project was amended to expand support for biotechnical research managed by PCARRD. RRD is now being restructured based on the experiece of the first few years. The project was initiated in a difficult political climate when there was a reluctance by government agencies to resolve sensitive policy issues related to land use rights. The management design of the project, where decisions for each year's activities were decided by a steering committee, was found unwieldly with annual plans approved long after the activities had taken place. In 1987, the project will expand its farming systems research and pilot agroforestry efforts, and will undertake several reforestation contracts with private organizations.

In 1985, USAID/Philippines sponsored a review of upland agroforestry projects in the country (Seymour, 1985). The report distills the experience of USAID and other donor and NGO projects, with special attention to factors affecting local people's participation. A summary is given here in lieu of itemizing the lessons of RRD alone because the report provides a broader perspective and reflects many of USAID's own views.

Seymour used the early Buhi agroforestry initiative, which involved bench terracing and tree planting, as one example of the difficulty of inspiring farmer's long-term participation. Paying local people to reforest slopes, without prospects of other benefits until the trees were mature, led to neglect or even destruction of tree saplings. The success of the World Neighbors Soil and Water Conservation project was based on the demonstration of immediate gains from some activities (e.g., fodder from grass planted on risers) in addition to showing the long-term advantages for agricultural productivity from hedgerow planting of Leuceana leucocephala (ipil-ipil) trees.

Contrary to the perception of many planners, Seymour suggested that the lack of legal land tenure was not always the most important obstacle to farmer participation. De facto security was more significant, arising from a variety of mechanisms, including stewardship certificates or a guarantee of non-eviction by landlords. Further, land security alone did not automatically result in the adoption of agroforestry technologies. Access to markets, a good relationship with extension agents and similar factors had equal importance. Because land tenure was such a sensitive issue, Seymour warned that open negotiations with landlords, as well as information campaigns, were essential. Many farmers were openly distrustful because previous BFD programs involving land or tree rights often resulted in BFD reclaiming land once it was planted in trees.

Several economic considerations had important consequences for the success of upland agroforestry projects. The presence of a transportation infrastructure affected the economic potential of different tree crops. For example, in an isolated area without good roads, cashew trees proved more promising because the nuts could be processed on site and they commanded a high market price per unit volume. Several of the USAID-BFD agroforestry pilot prjects supported road or trail construction to improve market access. The market potential of different tree commodities was often imperfectly understood, but it had significant implications for the long-term viability of a program. Seymour noted that the dependence by upland farmers on a single buyer for an agroforestry product left some too vulnerable to economic upsets.

Another important factor was the reliance by upland households on off-farm income. This affected labor availability for participation in agroforestry initiatives. In World Neighbors e.c. site, several original participants left for wage work and the remaining householders could not maintain the introduced agroforestry practices. Because of the need to earn cash wages, local people bitterly resented projects which hired outsiders for project labor. The USAID-BFD program found that revitalizing traditional labor exchange systems worked remarkably well for several sites.

The relationship between government offices, project staff and local people determined the course of many of the agroforestry pilot efforts. Local BFD officials were frequently uncomfortable with their new role (since 1975) of providing stewardship rights and technical assistance to people occupying public forest land. With a weak commitment to implement this mandate at the highest levels of the agency, local BFD officials. Frequently designated the worst lands to agroforestry or delayed issuing stewardship certificates. Seymour observed this situation was made worse when agroforestry project staff adopted a confrontational stance rather than taking all possible measures to meet the BFD more than half way.

A related issue was local people's participation in project decision-making. A major difference between BFD and some PVO projects was the initial choice local people had about being included in a project. Another important decision was the employment of local people for project activities. Seymour noted that out local communities were more enthusiastic when they determined who would be hired. Another device was offering a "menu" of agroforestry technologies so that individual households could opt for measures which particularly appealed to them. An important factor was the focus of extension agents on a few key innovations, such as field contouring and hedgerow tree cultivation. The most successful agents did not push a wide range of changes, but rather acted as facilitators for the community to obtain other government

services unrelated to agroforestry. The active participation by extension agents in project work, even cultivating their own agroforestry fields, proved especially effective for developing a rapport between project staff and local people.

Seymour pointed to several mechanisms to spur local enthusiasm by local people and agroforestry technicians. Demonstration farms used by the Mindanao Baptist Rural Life Center was one case in point. MBRL developed sloping agriculture land technology (SALT) and used showpiece farms to visually illustrate its benefits, both financially and for soil conservation. The World Neighbors program encouraged farmer-to-farmer visits to show new participants the achievement of others. A related device was the training of farmer leaders to take on some extension responsibility. This work was voluntary unless farmer leaders traveled outside their immediate community.

3. INSTITUTIONAL ISSUES

3.1 Inter-agency cooperation and coordination

The lack of coordination among host-country agencies during the implementation of field activities is chronic in forestry projects. As the evaluation of Nepal's RCUP noted, each line agency tends to implement its component independently of the other agencies. This has been a difficulty with integrated rural development projects in general and AID is no longer encouraging complex multi-sectoral projects such as Rapti in Nepal and Citanduy II in Indonesia. A major lesson is that committees are not a sufficient device to ensure coordination. The steering committee approach used in the Philippine RRD project caused significant delays in project planning and implementation. USAID is now designing the project to rely less on this mechanism.

In addition to a general problem faced by most rural development programs, there is a difficulty symptomatic of community forestry activities. The departments of agriculture and forestry are often in conflict in terms of priorities and their mandates. Even when these agencies are housed in the same ministry, there is usually a long history of antagonism. This has affected the implementation of every upland watershed management project AID has undertaken in Asia. The social forestry and community woodlot programs have been almost as seriously affected, with major conflicts arising over which agency has jurisdiction over public lands. The upland projects become entangled in a bureaucratic standoff because field activities require interaction between disciplines to undertake soil conservation measures (terracing, alley cropping, etc.) and to disseminate new farming technologies (improved annual crops, multipurpose trees, mulching, etc.).

This situation is made particularly difficult because both disciplines are relatively inexperienced in coping with the needs of rural people in uplands where agricultural expansion is more recent and the underlying resource base is poor. The agriculture departments are more familiar with agronomic requirements of lowland agriculture (frequently irrigated) and with large-scale production of estate tree crops in upland regions. The rural people farming on marginal, steep land tend to be minority ethnic groups and/or very poor, thus their needs are less understood and the technologies for low investment agriculture are not available.

Similarly, forestry departments in Asia have only recently engaged in the business of community forestry and rural development. Their conventional role is the protection of forests from encroachment. Most of the Asian forestry departments own or have regulatory power over a substantial portion of a nation's land. In Southeast Asia, forestry departments are quite powerful in

that they are responsible for lucrative timber export industries. These characteristics have made forestry and agricultural agencies assess priorities of watershed management and upland rural development from opposing perspectives, where the former emphasize reforestation and the later increasing agricultural production. During Citanduy project implementation, forestry split from the Ministry of Agriculture to form its own ministry, creating havoc for project management. The designers of the new Upland Agriculture project in Indonesia deliberately avoided the Ministry of Forestry by selecting the Agency for Agricultural Research and Development as the lead institution for research and the Ministry of Home Affairs for field implementation.

In addition to difficulties of coordination of field activities, agencies in Asia often have serious conflicts over their jurisdictions which are manifested as deliberate noncooperation in development projects. For example, the Madhya Pradesh Social Forestry project experienced serious problems with land acquisition for community woodlots because the State Forest Department had contradicting instructions from different programs for using revenue lands. Further, the local record keeper of land transactions frequently avoided SFD staff because land encroachment was in his vested interest. This resulted in delays and often only the most degraded lands became available for tree plantations. In the Philippines, Castillo and Castro (n.d.) describe several cases in the uplands where different government agencies have vied for exclusive jurisdiction over lands. For example, the National Electrification Administration acquired uplands for establishing fast-growing plantations for dendrothermal energy production. Legislation has also transferred the Bureau for Forest Development's (BFD) management responsibility for certain critical watershed to the National Power Corporation and the National Irrigation

Administration. Although BFD still manages most of the public lands in the uplands, the authors suggest that pressure from the Ministry of Agriculture and Food and the Ministry of Human Settlements will continue.

3.2 Implementation capabilities of host country-institutions

Most of the projects have encountered weak management capabilities of local forestry institutions. In Nepal, the staff of the Department of Soil Conservation and Watershed Management (DSCWM) was too small and untrained to implement the ambitious RCU project. Similar difficulties were experienced by the Forestry Department in Sri Lanka during the implementation of the Reforestation project. Part of the difficulty has been the processing of funds for field activities and having an effective financial monitoring system. The financial administration and management of donor projects often consume the time of the best qualified personnel, leaving field programs run by inexperienced juniorstaff. The advent of many donors with large forestry projects has placed severe strains on these institutions. USAID/Sri Lanka decided to withdraw from the sector for this reason.

The difficulties of administering community forestry projects was symptomatic of the inexperienced and insufficient number of staff in many forestry departments. Blair (1986b) suggests that having a capable and dedicated group for forestry projects is a key ingredient to success. Many AID projects have attempted to expand forestry staff and train them at the same time as implementing a large field program, such as in India, Nepal and Sri Lanka. The training effort, especially overseas long-term training, then comes into conflict with other project components requiring qualified staff. Furthermore, foresters who excel enough to receive advanced university degrees often get assigned to administrative positions and no longer participate in field implementation. Allowing the training to take early precedence and revising the schedule for field implementation seems the most effective way to overcome this difficulty. The RCUP in Nepal and Reforestation project in Sri Lanka made the institutional strengthening the highest priority and achieved significant progress at preparing these institutions for the task of implementing large forestry programs. The new National Social Forestry project supported by USAID/India includes a condition precedent that personnel trained under the project will be subsequently assigned to project-related activities.

The centralized nature of many forestry departments has caused inordinate delays when timing is crucial for successful planting and for earning a reputation for reliability among rural people. This caused a setback in reforestation activities in the Mahaweli project. In Thailand, the line agencies are so committed to a

centralized system that special local branches were created for the Mae Chaem project, which interfered with project management by the local government.

The USAID/Philippines Mission found that several institutional arrangements were crucial for the implementation of their pilot upland agroforestry program (Bisson and Guiang, 1986). A decentralized management structure provided more flexibility for forestry staff to respond to local conditions and needs. The authors note that under the Buhi Lalo pilot agroforestry project, the failure to pay rural people in a timely way led to the burning of the the nursery and project buildings. Under the RRD project, funds are now transferred from the central government to local implementing offices, such as the district forestry office or municipal mayor. This strategy, as well as training project staff in financial reporting and management, have successfully overcome most of the serious cash flow delays.

4. TECHNICAL ISSUES

4.1 Appropriateness of sites

In some of the projects, field sites for community plantations are too degraded to be used without considerable investment, for example the Madhya Pradesh and Rapti projects. It should be recognized that the revegetation of such lands may be beyond the realm of a project oriented towards rural forestry. As it was discovered in India and elsewhere (e.g., Philippines) severely degraded lands require heavy investments in order to improve soil fertility and to undertake successful replanting, watering, weeding and other cultivation tasks. These may be beyond the means and capabilities of poor farmers. Alternatives, such as contract reforestation using private firms, will be tried in the Philippines.

In other cases, species trials are located on the most productive land, for example in Nepal and the Philippines. Thus, species trials were not representative of conditions most farmers must face and unrealistic expectations resulted for tree growth rates. The RCUP evaluation recommends that the temptation be resisted to put trees where the forester knows they will flourish if the project objective is providing technology for using lands that too marginally productive for agriculture.

A common difficulty is inadequate field testing of soil characteristics and the distribution of prevalent soil types. In many Asian countries, particularly in upland and mountain environments, soils are extremely heterogeneous. Field kits were

recommended in the Madhya Pradesh evaluation as a simple means for extension officers to test site conditions. In Indonesia, the new Upland project is devoting considerable technical assistance to soil testing, mapping and identifying appropriate planting systems for each soil situation.

4.2 Appropriateness of tree species

A major lesson of the social forestry and community woodlot programs is that the demand by rural people for a particular type of tree cannot be ascertained by macro-level analyses of tree product supply and demand. A premise of these programs has been an increasing fuelwood deficit at the state or national level will act as a motivating force for local participation in community forestry activities aimed at growing more fuelwood or fodder. Both the Madhya Pradesh and Maharashtra projects have discovered that households perceive fuelwood as a low priority for plantations because Indian women collect fuelwood without any cash outlays, although it is an arduous task for them. Further, many households are acustomed to using cow dung for fuel.

A report for the Rapti project (Conley and Madhya, 1985) is very revealing of the different perceptions of forestry needs between the local people and forestry project personnel. Although multipurpose and horticultural trees were in the highest demand, nurseries often provided them with pine seedlings. Similar difficulties have arisen in the most of the upland watershed management projects.

Blair (1986a) describes the lack of enthusiasm by farmers in the Maharashtra project for fuelwood production despite their overwhelming acceptance of tree seedlings for planting on private land. The trees are grown primarily for poles used in construction and small timber. In other Indian states such as Gujarat, farmers are responding to the paper industry's demand for pulp. This unanticipated result demonstrates how little was understood during the design of the social forestry programs about local market conditions for tree products. Blair also suggests community woodlots on common land are seen not as sources of domestic fuelwood but rather as sources of income. Communities distribute woodlot produce by either auctioning the wood or by selling on a concession basis to local people, rather than doling out free products for domestic consumption. However, the community plantations and private woodlots do provide fuelwood and fodder during thinning and branch lopping.

The use of social forestry products for cash income is not a negative trend but long-term risks, such as farmer vulnerability to changes in wood pole prices, require special consideration. On the

macro-scale, states or countries may not want to encourage a trend away from food production on fertile lands. The Maharashtra evaluation urges an indepth study of the long-term implications of displacing food growing with cash-earning treeplanting. Although social equity issues have been raised (see Chowdry, 1985), observers such as Blair believe that in the long term, the rural poor will receive greater benefits from the social forestry program than the wealthy. This is because ownership of land is not correlated to wealth and there are large numbers of "landed poor" who own degraded land where it has been too difficult to cultivate food crops. The Maharashtra evaluation suggests the opportunity costs to the wealthy farmers will be higher because they must convert valuable productive land into tree plantations rather than marginal lands if they desire to expand tree production.

In Indonesia, I reviewed the upland farming systems research associated with the new upland project. In rejection of earlier development efforts promoting timber and low value species, the trees introduced to farms were familiar, high cash value horticultural and spice species. Some nitrogen-fixing trees, already used traditionally in Java, were also planted as hedgerows. The next step will be identifying how to integrate the management of these trees into farming systems in such a way that they provide tangible benefits to farmers as well as perform soil protection functions. The research still does not reflect a clear understanding of local market conditions and farmer needs. There is an implicit assumption common to agroforestry programs that if, for example, foliage from a tree can be demonstrated to be good fodder, rural people will automatically use it that way. However, the most urgent problems facing farmers in each site must be identified before appropriate tree cultivation systems can be devised. Household labor constraints, for example, may make some trees more attractive as a source of income if they have high resilience to drought conditions or pest resistance rather than high productivity when managed intensively.

Another important issue related to species selection is the risk of relying on monocultures of exotic species. Although this risk did not emerge as a major lesson from forestry project evaluations, recent developments demonstrate how important it is. An insect pest new to Asia is attacking one of the major agroforestry trees (Leucaena leucocephala, or "Ipil-Ipil") planted in the region. Large-scale defoliation has already occurred in the South Pacific, Philippines and Indonesia and is expected to spread throughout Asia. Viewed as a "miracle tree", ipil-ipil seeds have been enthusiastically distributed by AID and other donors to promote agroforestry and soil conservation.

Another case is the extensive use of eucalyptus species for social forestry and village woodlot programs in countries such as India and Thailand. A controversy has arisen over the ecological

impact of widespread eucalyptus use and its suitability for meeting rural needs such as fuelwood and fodder. FAO has recently released a report (Poore, 1985) summarizing the scientific evidence for both negative and positive effects of eucalyptus plantations. In some cases, these plantations can lower water yield from catchments, compete with ground cover or crops when water is in short supply, ineffectively control soil erosion and significantly decrease the diversity of wildlife. This illustrates another important issue often not discussed in the project evaluations. It is a fallacy to assume that the act of planting trees results in soil conservation. Identifying tree species which offer both economic benefits to farmers and good soil stabilization is just beginning.

Common factors leading to over reliance on a few fast-growing exotics are ease of propagation, good seed availability, and adequate knowledge of tree site requirements. New research on these characteristics for indigenous trees is now strongly endorsed by some Asia countries, most notably Nepal where a highly visible failure of a large eucalyptus plantation occurred (not related to an AID project).

It is critical to recognize the high risk rural people face when they rely too heavily on a single tree species for meeting subsistence and economic needs. The rapid and complete defoliation of ipil-ipil trees in the Philippines has been a major set-back for upland agroforestry efforts there. The ultimate costs in terms of economic losses, reductions in environmental protection and in rural people's trust are incalculable. On 2,000 ha of critical watershed land in the Philippines, a loss of about $400,000 and unemployment of 300 families is expected to occur the ipil-ipil leafmeal industry (commercial production of fodder from tree leaves). There is a history of extreme fluctuations in the price of tree crops such as coffee, cloves and oil palm in Asia, which can have disastrous effects on rural people and their tree cultivation patterns. In Java, a decline in coffee prices inspired some farmers to cut their coffee trees to make way for more clove and vanilla, only to see coffee prices climb again.

4.3 Quality and appropriateness of U.S. technical asistance

Most of the forestry projects, except those in India, are contracted to U.S. firms for technical assistance, training and guidance during field implementation. The performance of these contractors has been uneven, with frequent changeovers in personnel. The Sri Lanka Reforestation project and the Citanduy project had no consistent Chief-of-Party. Some firms have not been sufficiently experienced at subcontracting for construction, project administration and monitoring activities. U.S. universities, oftenacting as consortia, have been especially notorious at sending

A particular difficulty for community forestry projects is the shortage of qualified experts, especially those with tropical Asia experience. Conventional forestry expertise is often inadequate for coping with tree planting in a rural development context. Fortmann (1986) notes that the biases of some U.S. foresters have been exported to developing countries, inhibiting the integration of women into community forestry programs. Dependence on U.S. technical assistance can also worsen already poor linkages between technical agencies and local research institutions. Often the true need is for management expertise, as recognized in the Mae Chaem project when USAID/Thailand hired one expatriate to provide guidance to Thai staff trying to manage the project. In addition, relevant disciplines are not always forestry per se, but rather natural resource management, ecology and social sciences.

In some projects, U.S. contractors were given responsibilities best left to USAID staff. The implementation of upland agroforestry activities often entails, as noted earlier, the cooperation of agriculture and forestry departments. Politically charged conflicts often arise over land jurisdiction and project priorities. In this context, professional foreign service staff are better qualified than contractors to encourage an acceptable resolution. For example, the evaluation of the Sri Lanka project suggested USAID staff should have been more directly involved in discussions with the Forestry Department during project implementation. The experience with the Rainfed Resources Development project in the Philippines indicates that successful management of pilot agroforestry efforts is labor intensive for both USAID staff and government agencies (see Bisson and Guiang, 1986).

This is not to suggest that U.S. technical assistance is always inappropriate or problematic. Important linkages between U.S. and Asian universities have formed through the training components of the forestry projects. U.S. universities are now developing curricula and training programs which are more relevant to developing country needs. In particular, U.S. advisors can help develop better methods for integrating technical disciplines (e.g., agroecology) and for strengthening research capabilities such as problem identification, microeconomic data collection and data analysis.

The contracting of forestry projects is usually necessary because USAID staff have neither the time nor the technical background to undertake the projects single-handedly. Several Missions draw on short-term technical assistance from the Forestry Support Program (available through AID/W) and hire long-term advisors individually as personal services contractors (PSC's). USAID/India is hiring two PSC's to work on community participation and monitoring/evaluation aspects of the NationalSocial Forestry project (a special difficulty in India is that country's resistance

to any foreign technical assistance, even when appropriate). Another strategy might be to expand the number of foreign service national staff in USAID missions who have backgrounds in forestry and natural resources management.

5. COMMUNITY PARTICIPATION ISSUES

5.1 Host-Country extension systems

A variety of strategies have been tried to disseminate forestry technologies to rural people and to facilitate local community participation. The formal extension structure of most Asian countries separates forestry from agriculture. Some of the AID projects, most notably the Indian social forestry projects, devote considerable resources to expanding forestry extension services. The dilemma many countries face is that forestry institutions have only some of the technical expertise needed for community forestry and upland agroforestry programs and they have weak capabilities in rural development and extension.

A recurring problem for the AID projects has been the difficulty of transforming forestry departments from a regulatory orientation to one devoted to providing services. Community participation in the early stages of project implementation and adoption of introduced technologies has been especially poor. Part of the problem has been the reluctance of forestry agents to include rural people in the project decision-making process and their misunderstanding of local needs.

Almost all the evaluations noted the lack of involvement by rural women, despite the fact that women in Asia are the major collectors of firewood and fodder, as well as the principle cultivators of many tree crops. The male domination of forestry institutions and cultural biases against women make this a continuing problem (see Fortmann, 1986). Many of the projects, such as in Thailand and Philippines, are directed at minority ethnic groups who have encroached on public lands. Historic antagonisms between those responsible for protecting forests and minority people who have cut the forest down are difficult to overcome.

Emerging from the Asian forestry experience is the clear lesson that there are strong advantages to having field staff live on or near project sites. By encouraging forestry personnel to live on the site of the agroforestry pilots or even farm their own agroforestry fields, the Philippine RRD project has been able to gain the trust and respect of local farmers. The interface teams in Thailand are able to draw hill tribe communities into the rural

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villages. In recognition of the importance of regular interactions between forestry staff and local people, considerable investment was made in the Nepal RCU project to provide field housing and facilities for district officers and extension personnel to make living near rural communities more attractive.

A related issue is the lack of coordination among extension services when each department pursues its own program independently of others. Rural people are then presented with a confusing array of advice and technologies, such as in the two Nepal projects, Citanduy II, and other integrated rural development programs. A creative solution to this problem is being tested by the Mae Chaem project in the form of the interface teams. One advantage of these teams is their lack of affiliation with either the forestry or agriculture departments, as well as their representation of local minorities and women.

Some agriculture departments argue that it is unnecessary for foresters to be the agents of extension in community forestry and upland agroforestry programs because trees can be treated like any other crop. This argument has merit, particularly for agroforestry programs which include both horticultural and fuelwood/fodder tree planting on private land. The weakness of relying solely on agricultural extension agents is their lack of technical knowledge about the site requirements, growth characteristics and appropriate cutting regimes for multipurpose tree species. However, many forestry institutions also lack this fundamental information.

Most forestry projects involve natural resource management elements which are not traditionally part of agricultural expertise, such as watershed protection. Therefore, special training of agricultural extension agents by forestry experts might be appropriate for some projects. The issue becomes a question of which mechanism has the most impact and is cost effective: training agricultural extension agents in pertinent areas of natural resource management and multipurpose trees or training foresters in extension and agricultural production principles? The answer will vary from country to country, but preliminary experience in Asia suggests that the first option should be given greater consideration. This is already occurring to some extent with increasing efforts to integrate trees into farming systems research. USAID/Indonesia is hiring a personal services contractor to focus specifically on this need. The proposed Homestead Agroforestry project in Bangladesh will rely on forestry experts to train agroforestry extension agents who will remain part of the existing extension system. A particular empnasis of that project will be training women extension agents.

For projects initiated on public lands, it may be more appropriate to rely on forestry extension. For example, upland projects in the Philippines and Thailand focus on public lands owned

by the forestry departments. These projects emphasize providing alternatives to destructive land use practices at the same time as protecting remaining forested land. In such cases, it may be crucial to involve the forestry departments in extension efforts so that they gain a commitment to meeting rural people's needs as well as traditional forestry goals. Further, rural communities which are overexploiting nearby natural forests require more than extension services promoting tree planting on private land. The development of long-term resource management programs with active participation by communities, including the protection of public forests from overgrazing, is a necessary component of many programs such as the RCU project in Nepal. However, the costs of building large forestry departments have not been fully weighed against alternative mechanisms for disseminating technologies and land seedlings.

5.2 The role of non-governmental organizations (NGO's) and the private sector

More critical than the issue of which extension service is the most appropriate is the scale of the problem versus Asian countries' resources. Every AID social forestry and agroforestry project has encountered the situation where host-country governments cannot afford to maintain a staff large and skilled enough to administer services to all the rural people in need. The constraints experienced by Nepal's Department of Soil Conservation and Watershed Management are a case in point. Even with a major effort to train new extension personnel, there will not be enough extension agents in Nepal for years to come. The recurrent costs of new personnel are also an important constraint. Although improving extension services will continue to be an important response to the agroforestry and natural resource management needs of rural people, alternatives to formal extension systems need more attention.

A similar issue arises with the interface teams used in Thailand. Although the IF teams are a creative means to ensure communication between rural communities and government offices, their costs need to be carefully evaluated. An alternative to salaried IF teams might be establishing a voluntary corps recruited from universities and NGO's. In recognition of the inability of extension services to reach all rural communities, the Maharashtra and RRD projects rely on village motivators or farmer-leaders. The exact arrangement varies, but the strategy is often to provide key participating farmers with logistical support and training to act as project extension agents. Similarly, demonstration farms which are shown regularly to visitors have stimulated enthusiasm and often spontaneous adoption of agroforestry technologies in Indonesia and the Philippines. Still at issue is the best approach for demonstration farms to spur farmer or community self-action.

Several evaluations recommend more participation by NGO's. There is a real potential for more collaboration by both international private voluntary organizations (PVO's) and by local NGO's. The assistance of Nation Builders in the reforestation efforts of the Mahaweli Environment project illustrates both the benefits and hazards of using local NGO's to undertake field activities. Nation Builders was able to provide substantial manpower for reforestation of a watershed, as well as tree nurseries to supply themselves with seedlings of indigenous species. However, claims of underpayment by local people working with Nation Builders were suggested in the project evaluation. It is clear careful supervision of NGO's is required if they are to be a productive addition to existing extension services. Delays in payment to Nation Builders caused the loss of all seedlings already grown for the impending growing season. This demonstrates that implementing agencies will need to improve their reliability in order to attract NGO's into collaborative programs.

In the Philippines, religious PVO's such as World Neighbors have successfully introduced soil conservation techniques to upland communities, including alley cropping and hedgerow contour planting. USAID/Philippines has provided some support through the PVO Co-Financing project and maintains an active interest in how NGO's demonstrate to upland farmers the benefits of soil conservation. Several of the NGO strategies are now used by the BFD, such as emphasizing immediate benefits to farmers as well as long-term merits of alley-cropping and using successful farms as demonstration and training sites for new participants. An appropriate technology NGO in Java participated in the Citanduy II project by successfully mobilizing local communities in one area to establish woodlots and tree orchards. It is unfortunate that there is little documentation of these cases, particularly the extent to which communities served by NGO's continue to manage woodlots or trees on farms on a sustained-yield basis.

Several project evaluations also recommend more involvement by the private sector in community forestry projects, especially to replace government-run nurseries for the tree planting programs. For example, the social forestry programs in India require a large volume of tree seedlings to meet rural people's demand. The costs of maintaining nurseries, including staff time of the state forestry department, act as a major drain on the program. Stimulating the development of private nurseries would not only relieve some of this demand on resources, but would also provide more rural employment. USAID/India has placed a condition precedent on the new National Social Forestry project that requires the seedling production program be slowly converted into an economic enterprise and that the prospects of relying on private nurseries be actively investigated.

USAID/Nepal recently funded a review of institutional arrangements and policy constraints which inhibit the management of productive forests on long-term, economic bases. In the Philippines, USAID sponsored a study of the prospects for private enterprise participation in contract reforestation of public land. This study will help guide the redesign of the RRD project. These trends reflect a growing recognition that government-subsidized efforts to mobilize rural communities to replant degraded lands cannot fully address the scale of the problem. Community-based efforts will help reduce the rural demand on remaining natural forests, but larger-scale reforestation of public lands may be necessary in many countries to ensure adequate wood production and watershed protection at the national level.

5.3 Incentives for tree planting and management

The Asian experiments with different incentives to rural people reveals the importance of understanding local ecological, economic and social conditions which act as constraints to tree planting and long-term resource management. An assumption of early projects was that poor seedling availability was the principle factor constraining people's tree planting. The dissemination of free seedlings was tried on a large scale in India, Nepal, Indonesia and elsewhere. The response was favorable by farmers only when trees provided high economic and domestic value. For example, eucalyptus and other tree species were readily planted in some states of India and Thailand because the local polewood and small timber market promised large profits for the small amount of labor invested. Horticultural trees and fast-growing fodder species such as bamboos were popular in both the Nepal projects. In Java, the Ministry of Forestry's Regreening program has had an uneven success, with many low-value trees cut for fuelwood by local people and not replanted. Highly visible, however, are some Javanese upland fields which are still managed as woodlots and orchards resulting from this effort.

On the whole, the match between farmer's needs and trees provided has been haphazard. Rarely are marketing studies undertaken during the design phase of the social forestry and upland agroforestry projects, because it is assumed tree produce will be consumed domestically. There is still surprisingly little known about pre-existing patterns of trade in fuelwood, fodder, minor forest products, and cash tree crops (spices, fruit, etc.) or the prospects for marketing surplus produce from community woodlots. Seymour (1985) notes the presence of a good transportation infrastructure has a remarkable impact on the sustainability of agroforestry efforts in the Philippines.

A series of small case studies of successful adoption of private land tree planting undertaken by local cooperators was funded by AID/W (EDI, 1986: contracted through S&T/EY) in a number

of countries, including India (two states), Thailand, Philippines and Indonesia (Java). The results suggest several generalities about tree planting on private land, or with secure tenure rights. Even when farmers consume most tree products domestically, they base their planting and management decisions on their perception of potential cash sales. Relatively wealthy farmers are the first to experiment with tree planting because of the risks involved. The small-scale farmers who follow frequently do not obtain as high profits as they expected. Where tree cultivation has become a more established enterprise (e.g., Java), farmers usually grow more than one species and sell more than one product. The study emphasizes the importance of documenting existing tree farming and marketing patterns with an careful assessment of the economic experience of previous community forestry programs.

Equally important as marketing considerations are the social, economic and cultural context in which land use decisions are made. For example, the highly stratified Indian village structure is a determining factor for who will participate in social forestry efforts. The "power relations" between households, as well as within households, were not sufficiently recognized when mechanisms were developed to encourage community participation (Blair, 1986b). In India and Nepal, village leaders have sometimes acted as impediments rather than as proponents of community forestry when a project threatens to undermine their economic position relative to other villagers. An understanding of social relationships has also helped mobilize communities, such as the use of traditional cooperative labor arrangements in Indonesia and Philippines.

Factors affecting land use decisions include household labor availability and the degree of reliance on a cash income from wage labor. The need to maintain sufficient flexibility in the farming schedule to permit off-farm employment has important consequences for agricultural decision-making in upland Java, Philippines and probably elsewhere. In Indonesia, the Citanduy II project established a socio-economic studies center to conduct such micro-level research. In Nepal, rapid rural appraisal techniques are being used to help guide the last years of RCU project implementation.

The failure to understand the economic and social context in which local people make their decisions has led to several unsuccessful experiments with subsidies to farmers. In general, direct payment to farmers for tree planting has provided little incentive for long-term management of trees. However, subsidies are found necessary for the rehabilitation and construction of upland terraces in some upland projects due to the high initial labor investment required. Such initial assistance must be carefully weighed against the sustainability of the the program. In the

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agroforestry program received greater acceptance when there were opportunities for immediate gains to farmers for participating in the program. For example, local people were paid for their work on constructing a graded trail and the community invested the income to pay for electrification. This established early enthusiasm and a working relationship between project staff and local people.

5.4 Community participation on public versus private land

The establishment of community woodlots on public land remains an attractive and necessary alternative to uncontrolled exploitation of natural forest and further deterioration of soil and water resources. AID projects in India, Nepal, Thailand and elsewhere have successfully established community woodlots, but their long-term management by local communities remains elusive. This is the biggest challenge for the forestry projects, providing sufficient incentives for sustainable use of public lands.

The experience to date reveals several interesting lessons. The RCUP evaluation noted a direct correlation between the extent to which local people were drawn into the project planning process and their enthusiasm for panchayat forest management schemes. This point is echoed by Blair (1986b) regarding the Indian social forestry program and by Seymour (1985) about the Philippines upland agroforestry project. Conversely, the dedication of project personnel to meeting quantitative targets has directly inhibited the degree of local involvement in project decision-making in almost all the projects reviewed.

The primary lesson of early Asian projects on public land is that usufruct rights to either land or trees should be made available to local people to gain their participation. Stewardship and land use certificates to recently deforested land in the Philippines and Thailand, combined with the introduction of improved agricultural technologies, have provided sufficient incentives for farmers to invest in soil conservation measures, although this process has been slow. Many of the difficulties which have arisen are not due to the reluctance of local people but rather to the lack of forestry departments' commitment to issuing certificates. The most dramatic case was the Mae Chaem project where USAID/THailand was forced to freeze funds until the RFD complied with the condition precedent that land use certificates be issued.

Once local people perceive that they have land tenure security (either de facto or de jure), then they seem to respond with the same degree of willingness as farmers on private land. Some of the problems slowing upland agroforestry projects are more related to the isolation of sites from market centers, reliable transportation

The success of the upland agroforestry projects on public land, such as the Mae Chaem and Rainfed projects, has been greater than village plantation and forest management efforts on public land. Isolated examples of community adoption of the woodlot or forest management schemes in Nepal and India exist, but these incidences are not well-analyzed. It appears that the community forest projects present special difficulties because of confusion over how communities may distribute the produce. Varying interpretations of harvest and distribution rights between local and national forestry staff, USAID and the local farmers have acted as a disincentive in India and Nepal.

It is evident that very little is known about the political dynamics of rural communities.

USAID/India sponsored a series of small-scale case studies conducted by local researchers to pinpoint factors affecting community participation. One study showed powerful castes used social forestry as a way to remove lower castes from community land. This topic will be receiving even greater attention in the new National Social Forestry project, with an expatriate expert specifically assigned to address this issue. The new project will also test more strategies, some of which may avoid the conflicts inherent in community management plans by providing individual rights to harvest particular trees, or "tree-tenure".

The greatest obstacle to successful community forestry programs on public lands remains the forestry departments themselves. The relinquishing of government power over land and forest management to local communities requires high-level commitment to policy reform. Although this process has been slow, the AID projects in Nepal, India, Thailand and the Philippines have already made considerable progress.

5.5 Linkage between Research and Extension

A major weakness of many projects has been the poor link between research and extension. Two kinds of research are necessary. One type examines local needs and conditions which explain destructive land use practices and identifies known technologies, such as tree planting, to address these problems. This problem identification process is best undertaken by the technicians who will be trying to present alternatives to local communities. The other type of research is more basic, the testing of new technologies to improve agricultural production and resource conservation under the prevailing conditions of project sites. Both kinds of research are inadequate for most of the social forestry and upland agroforestry projects.

During my visits to several USAID's, I noticed the lack of information exchange and coordination among AID projects within a country. Most of the Asia USAID's support farming systems research, but often the research is conducted independently from the upland agroforestry or social forestry efforts. Agricultural departments take the lead for research, while forestry departments are implementing community forestry programs. Further, universities in countries such as Indonesia, Philippines, Thailand and India have ongoing research of direct relevance to the social forestry and community forestry programs. However, there are few mechanisms to take advantage of these efforts or even redirect them slightly to address technical problems encountered during project implementation.

6.0 PROJECT DESIGN, MANAGEMENT AND EVALUATION ISSUES

6.1 Conflicts between project goals

An important issue that is often skirted is the role of trees in rural development. A fundamental question is why is AID promoting tree planting? One answer is that it is to increase the income of rural people. Another is that it is to increase the sustainability of natural resource use. These goals are not always compatible, as the Maharashtra evaluation noted: "to achieve the aim of social forestry to produce timber to increase the rural supply of fuelwood and fodder may be inconsistent with the aim of providing maximum income return to the participants through the sale of timber as a cash crop". Further, despite a common inference in project papers, the act of tree planting is not a reliable indicator of soil conservation. Other practices may be equally or more effective measures and offer better economic returns. If the goal then becomes increasing rural income, we need to ask how cost effective is it to invest heavily in new extension systems? Trees as cash crops, particularly when they are only a few species, could probably be distributed at less cost by pre-existing agricultural extension services.

However, the aim of the social forestry and agroforestry projects is more than increasing rural income in the short-term. The distinctive feature of these efforts is the explicit commitment to encouraging less destructive land use practices and a long-term increase in productivity. Tree planting is therefore viewed as a primary strategy for improving the sustainability of the natural resource base. As Seymour (1985) observes in the Philippines, truly successful projects do not lose sight of longer-term goals. There are trade-offs between short-term profitability and establishing a production system, which in the long run, generates a reliable income while protecting, or even enhancing, the natural resource base.

Providing for fuelwood needs was a primary objective of most of the early forestry efforts. By in large, project evaluations do not address the extent to which tree planting programs have accomplished this purpose. The problem of rural energy remains critical, however, and requires a frank assessment of the effectiveness of fuelwood investments for reducing household labor devoted to fuelwood collection and for decreasing the rate of deforestation. The experience to date suggests that fuelwood programs, as they are now conceived, do not represent a viable mechanism for coping with serious rural energy shortages. More attention is needed to the role of fuelwood use as part of the larger, complex pattern of natural resource use by rural people. The problem identification process during the design phase of projects requires more sensitivity to this complexity, in order to replace previous simplistic assumptions about rural people's needs. This includes understanding interactions between different segments of a society and how these affect the way forest resources are collected and used. For example, the failure to acknowledge the importance of women as fuelwood providers in Asian households has reduced the impact of some projects on rural energy problems, and illustrates the dearth of information on patterns of resource use by rural people. The collection, use and trade of minor forest products and of tree crop produce are poorly documented for most of the rural forestry projects, thus preventing realistic problem identification or accurate measurements of change in resource use brought about by project activities.

A related confusion occurs between goals to reduce macro-scale resource depletion and those to remove micro-scale environmental constraints encountered by farmers. The activities required to cope with these problems can be quite different and dealing with one does not necessarily translate into progress resolving the other. In the case of India, it is controversial whether the Madhya Pradesh and Maharashtra social forestry projects will help relieve cutting pressure on natural forests (see Chowdry, 1985). The rationale for the upper watershed component of the Citanduy II project was the reduction of sedimentation of lowland irrigation works. But the project was not designed to determine the origins of soil erosion in the uplands, so that the project impact on sedimentation loads cannot be determined. The more recent Upland Agriculture project in Indonesia recognizes this distinction by mapping the pattern of erosion at the regional scale in addition to focusing research on the specific biophysical constraints evident in upland farming systems. The latter includes testing ways to enhance and maintain soil fertility on farms, whether these will have major effects on sedimentation downstream or not.

6.2 Scale of field activities

Despite the experimental nature of AID forestry efforts, the Asia projects frequently have large field components. The quantitative targets often dominate project implementation because of their ambitious scale, to the detriment of other elements such as community participation. For example, the state social forestry departments in India were devoted to disseminating millions of seedlings and establishing community plantations on schedule. Extension efforts were forced to concentrate on wealthier farmers who could quickly absorb large numbers of trees (Blair 1986a). This distracted forestry technicians from developing plantation management plans with local people and from institutional strengthening activities. Nursery production and planting targets had similar effects for the two projects in Nepal, the Sri Lanka Reforestation project, and Citanduy II.

One of the reasons targets become the driving force in the community forestry projects is the concern by host-country governments and USAID's for visible results to justify their investment. The scale of the problem also forces many governments to see the only solution as a major field effort. Yet another reason is that staff performance is judged in forestry departments by performance criteria such as the number of trees planted, rather than by less tangible extension skills.

The upland agroforestry and watershed management projects have faced a special difficulty with the scale of their field activities. Projects in the Philippines, Thailand and Nepal discovered that upland and hill communities have heterogeneous composition in terms of ethnic groups and socio-economic circumstances. In addition, the ecological conditions of upland environments are extremely diverse, with patchily distributed soil types and a variety of climatic regimes. This means the agroforestry and soil conservation technologies appropriate for project sites may not be "packaged" easily.

It is also apparent from the experience of the Citanduy, Mae Chaem and RCU projects that large watersheds are not appropriate management units for community forestry programs. The watershed approach in all three cases imposed an additional set of management problems because physical watershed boundaries did not coincide with district and provincial boundaries. This forced a larger number of local governments to be involved in project implementation, a problem exemplified in Indonesia where the Citanduy watershed straddled the border between two large provinces. Effecting change at the watershed scale has proved a daunting task which overwhelms the community orientation of these rural development efforts. This is not to imply that watershed management is unimportant, but that planning and implementing community-based forestry projects is less formidable when political boundaries are used.

In recognition of the management and technical difficulties of large-scale field programs, a pilot approach was used in the Philippines RRD project. The follow-on to the RCU project planned in Nepal will also focus on a few small catchments (on the order of 5 ha). The disadvantages of the using pilots include the larger amount of USAID and host-country staff time required relative to number of people assisted. Another issue is how to scale up pilot efforts once there is a basic understanding of the ingredients of a successful program. The trade-off between large- and small-scale approaches is especially evident in forestry projects because of the long lag time before any results are measurable. A phased approach appears to be the most acceptable compromise.

Experimentation with a variety of field approaches, initially on a small-scale, could provide great potential gains. This is a justifiable investment when the economic ramifications of irreversible land degradation are considered (for example, the severely diminished land productivity and food crisis in some African countries). AID, with its country missions and its access to U.S. expertise in forestry, ecology and social sciences, is in a unique position to experiment with different institutional and technical approaches to natural resource management. It can play a pivotal role in guiding large capital investments by multilateral lending institutions such as the World Bank. In Asia, some USAID projects have already laid the goundwork for support by other donors' assistance in forestry, as in the case of Sri Lanka. This innovative role is consistent with the restrictive budgetary climate of U.S. foreign assistance, which implies smaller projects in the future and a narrower focus on areas where AID has unique capabilities.

6.3 Monitoring and evaluation systems (M/E)

Every project in this review has had problems with obtaining accurate data about how the field activities are proceeding. Basic information regarding tree growth rates, survivorship and end use is not collected on a reliable basis in most cases. For example, the RCUP and Rapti evaluations found it difficult to assess the success of different forestry interventions because of the paucity of data. Some district officers were discovered "padding" their estimates of seedling dissemination. The Citanduy project envisioned a substantial monitoring role by the Socio-Economic Research Unit, but the establishment of this unit was delayed until the final years of the project. Initiatives such as the Thailand village woodlot program do not even have provisions for monitoring community management and use of woodlots. During a field visit to an agroforestry pilot in the Philippines, it was evident that the local BFD staff were collecting only part of the information necessary to guide the design of a larger-scale program. Monitoring capabilities, as well as incentives, appear to be consistently weak

in Asian forestry departments. As Hyman (1985) notes in his review of community forestry M/E systems, management staff often resist establishing M/E systems because it exposes them to criticism about project decision-making.

Part of the difficulty of establishing effective M/E systems is the requisite need of clear operational measures of success. As mentioned previously, many of the projects have conflicting goals which are given different priority by different proponents. In some cases, U.S. contractors are lefttrying to resolve this problem, which can only be worked out through frank dialogue between host-country governments and USAIDs.

Nepal represents an extreme case of the difficulties of establishing an M/E system because of the large number of donor forestry projects demanding time from the government staff and the country's severe logistical constraints. USAID/Nepal sponsored the design of a M/E system for the Rapti and RCU projects. Korns and Smith (1985) proposed a variety of indicators for forestry components, including the annual number of surviving trees that are planted, instead of the conventional cumulative measure of total area or total seedlings planted. This would indicate growing capacity in terms of staff, expertise and infrastructure, to promote successful tree planting. Appropriate "yardsticks" were also recommended to include the number of seedlings per person which will have to be planted in order to cause improvements in environmental conditions versus how much is achieved. This links the longer-term project goals to immediate targets.

An effort is now underway in Nepal to have all donor community forestry projects to adopt one M/E system developed by UNDP/FAO. Similar efforts are underway in India for the social forestry program and USAID has hired an expert to work exclusively on this problem. USAID/Bangladesh is anticipating the need for a M/E system for the proposed Homestead Agroforestry Research and Development project and is developing a system following the general guidelines devised by the Asia/Near East evaluation office (ANE/DP).

6.4 Quality of project evaluations

The project evaluation process has had variable success for improving the Asia forestry projects. In some cases, evaluations have inspired significant restructuring, such as the Mae Chaem, RCU and RRD projects. In others, evaluation recommendations continue to be resisted by project management, such as the Madhya Pradesh and Rapti projects. USAID project officers also have exhibited varying degrees of frankness about the performance of their forestry projects, which may reflect disincentives within the AID foreign

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Because these projects are AID's first foray into forestry and natural resource management in Asia, mid-term and final project evaluations have a value beyond immediate project planning. The trends in desructive resource use in Asia do not permit the time for a fragmented approach; every lesson is invaluable to improving AID's natural resource management efforts. Unfortunately, the quality of the evaluations and assessments I reviewed vary substantially. Many do not address the larger issues outlined in this report, but rather focus exclusively on immediate management problems and achievement of targets. For example, the appropriateness of tree species as the conflicts between project goals are frequently omitted from the analysis. AID management is rarely critiqued, and there is little recognition of the experimental nature of rural forestry initiatives. Larger policy concerns are often not discussed in detail although these have a profound effect on the progress of a project. Another shortcoming of many evaluations is the failure to analyze, in as much depth as possible, the economic benefits derived from natural resource conservation measures. The fate of future investments in this area requires better documentation of previous costs and benefits, or it will be difficult to sustain a commitment by AID and Asian countries to resource management.

Out of the ten projects reviewed here, the best evaluation was of the RCUP project, while the Rapti evaluation consumed 427 pages without as cogent an analysis. The report by Seymour (1985)provided the most useful summary of country-wide lessons. One of the more disappointing evaluations was of the Sri Lanka Reforestation project, which was limited by restrictions on travel due to insurgency problems.

The evaluations are undertaken by AID staff, host country representatives and outside experts. The in-house assessments tend to avoid the broader issues and do not assess the performance of AID management. USAID project staff frequently express the opinion that they know the project so intimately that they already know what the problems area. While this is certainly true at one level, the underlying weaknesses in a project can be more apparent to outside reviewers than to those involved in project implemetation. Similarly, it is self-defeating to select evaluators from the firm contracted to implement a project. An important issue that the USAID evaluations consistently avoid is the appropriateness of the role U.S. contractors are sometimes asked to play in a project, particularly their involvement in policy dialogue. For these reasons, participation by outside U.S. technical specialists is especially valuable for high-quality evaluations. It is also important to exchange USAID staff between country missions to participate in each other's project evaluations. For example, USAID/Sri Lanka benefitted from the advice of USAID. India's forestry training expert (a joint career corps appointment), who also helped [illegible]'s new [illegible] of [illegible] ese

exchanges are crucial for rural forestry projects because of the relative inexperience of USAID's in this field. The ANE and S&T Bureaus can improve project evaluations by providing a mechanism for funding travel between missions perhaps allowing project funds to be used). The Forestry Support Program could be used more by USAID's to provide outside technical experts for evaluations., Further, mission directors can insist on better data to assess the impact and performance of rural forestry efforts.

6.5 AID management of forestry projects

Because the forestry projects are experimental, the USAID staff are faced with the need for continual reappraisal of project activities and goal modifications. Flexibility is possible within the AID system only when senior staff in the Missions and in Washington recognize the need for it. These projects can initially impose a greater staff burden on the Missions because they must monitor activities more closely and the USAID staff are often less familiar with the capabilities of forestry and host-country natural resource institutions. When countries send a clear signal to the Missions that natural resource management should be given high priority in rural development programs, then the senior staff seem more willing to devote scarce staff time to forestry projects, as exemplified by USAID/Nepal and USAID/India.

The technical background of USAID staff is usually weak in natural resource management, ecology, forestry or related disciplines. This is in spite of the fact that a substantial forestry portfolio exists in Asia. An additional problem is the frequent changeover in USAID staff under the foreign service system. The era of continuing cuts in foreign assistance makes the prospects for adding more trained U.S. foreign service staff to these projects unlikely. Short-term training opportunities for USAID staff remain poor because little emphasis is placed on these technical skills during the evaluation of staff performance. Alternative mechanisms used by some Missions include hiring personal services contractors and taking advantage of short-term assistance available from the ANE Bureau and from the S&T Forestry Support Program (FSP). A strategy that should receive more attention is the hiring of additional foreign service nationals from technical fields such as applied ecology and natural resource management. USAID's may become increasingly active in the regional projects, particularly the F/FRED project which encourages regional information exchange.

The AID/W offices can assist the USAID staff by better addressing their specific needs related to on-going forestry projects. For example, improved methods are needed for M/E systems,

computerizing the data base. Another area is devising improved analytical techniques for estimating benefits from environmental protection. Particular attention needs to be given to using aerial photography and satellite imagery to trace changing patterns of deforestation and soil erosion in project sites. On a more general level, the ANE Bureau and S&T technical offices can help synthesize and disseminate pertinent information on rural forestry and natural resource management.

7. SYNTHESIS

AID's experience in Asia with social forestry and upland agroforestry is mixed, with some significant advances. Many of the field activities have had major problems, with the exception of tree planting on private lands. The agroforestry efforts in the Philippines, Indonesia and Nepal have made considerable progress in introducing soil conservation measures to farmers. Many of the projects have disseminated large numbers of tree seedlings to rural people. The survival and integration of these trees into farming systems is not well-known but appears to be occurring at least to some extent. The establishment of community woodlots and managed forests on public land in India, Nepal and Thailand has proceeded slower than expected due to the difficulties of policy reforms affecting usufruct rights to land and trees. Advances are being made, due to the implementation of these projects, in the decentralization of government authority and increasing participation by the private sector in India, Nepal, Thailand, Indonesia and the Philippines. However, greater attention to promoting policy reform will be needed if projects focusing on public land are to achieve their objectives.

The first generation of forestry and watershed management projects are highly experimental with quite unrealistic expectations. Thus, the success of the field activities are sometimes judged by an unfair standard. In addition, some projects have "undersold" themselves by not carefully documenting field activities and the rate of adoption of new technologies, as in the case of the Citanduy II agroforestry demonstration plots in Indonesia and the RCU project in Nepal. Some difficulties are caused by events unrelated to technical miscalculations or the degree of commitment on the part of host country governments, but rather by ethnic conflicts, extreme weather conditions (including a volcanic explosion in Indonesia) and unanticipated political change.

Forestry as supported by AID in Asia represents a growing commitment to natural resource management, a commitment that is if in and

development are to be maintained. Almost all of these first forestry projects are leading to follow-on activities, demonstrating a continuing interest by Asian countries and by USAID Missions. In several cases, other donors have stepped in to build on the firm foundation established by AID, such as in the case of Sri Lanka. New AID efforts in collaboration with the World Bank are now underway in India and Indonesia.

The uneven performance of field efforts masks significant progress in strengthening institutions. Training programs are part of all the projects in this review. Curriculum development and improved in-country training skills have increased the potential for community forestry and natural resource management, as well as heightened the awareness of what the problems are. Administrative and personnel management skills are being acquired in forestry departments, which were early impediments to progress for most projects. Efforts at institutional strengthening, however, are only beginning and there is growing recognition that a substantially greater effort will be essential in most Asian countries.

Extension programs have presented special difficulties for the community forestry projects. An important lesson is that the resources needed to convert forestry departments into effective agencies of technology transfer may prove to be too prohibitive without more reliance on existing agricultural extension programs and on the private sector. The overlap between agriculture and forestry extension is considerable, although forestry agencies tend to explicitly address natural resource management issues such as watershed protection and soil erosion. The difficulties of reaching remote communities and training extension agents in social science skills have led to increasing reliance on alternative mechanisms such as village motivators and interface teams. The prospects are good for more involvement by NGO's in technology dissemination and tree planting activities. Several USAID's are devoting more attention to devices which would increase the private sector role in the reforestation of degraded lands and tree seedling production. Mechanisms to improve the transfer of technology and to involve local communities will continue to be a major issue for AID.

The urge to initiate field programs quickly on a large-scale has outstripped the understanding of the underlying causes of destructive land use and the situation-specific constraints to local participation One of the weakest elements of the social forestry and upland agroforestry projects has been insufficient attention to research and/or poor quality research. Baseline information is still lacking regarding local ecological conditions and socio-economic factors leading to destructive land use. The low quality and inappropriateness of forestry research is surprising in light of the general superiority of Asian scientific training relative to and

interdisciplinary research programs are underway, these efforts are at a small-scale and are not well linked to extension efforts. It is unfortunate that so much emphasis has been given to meeting quantitative targets rather than less tangible, but more accurate measures of success. More effort is needed to develop rapid rural appraisal techniques which, for example, can monitor changes in the amount of household resources are devoted to obtaining cooking fuel. Indicators of improved soil conservation, slowed deforestation and other measures also require refinement.

The newer AID projects in Asia reflect some of the early lessons. The Bangladesh Homestead Agroforestry Research and Extension project proposed for 1987 will improve the existing extension system rather than devoting resources to a separate service. Training and institutional strengthening are receiving considerable attention in projects under design in Nepal and India. Research on agroforestry and upland farming systems is given higher priority in new projects such as Indonesia's Upland Agriculture and Conservation. Policy dialogue and national planning are critical elements of the Forestry Planning and Development project in Pakistan. Natural resource management priorities are being assessed in Thailand as part of a profiling activity. The design of a national system for monitoring and evaluating state-level social forestry programs is supported in India's National Social Forestry project. The ASEAN Watershed Management project is addressing regional training and research needs in Southeast Asia. The Asia regional Forestry/Fuelwood Research and Development project is facilitating collaborative research and information exchange related to biological and socio-economic aspects of multipurpose trees and agroforestry.

Despite these very significant advances in the Asia forestry portfolio, the newer AID projects are not taking full advantage of previous experience in the region. Evaluations are not widely shared and are viewed as relevant only for planning within a Mission. USAID staff have little historical perspective on forestry efforts in Asia and only fragmented knowledge of each other's projects because of the AID foreign service posting system. Communication and coordination between USAID's and other donors within countries remains imperfect. There are few opportunities for project officers for the major projects to meet and discuss common problems and alternative solutions. This report is one of the first attempts to analyze the Asia regional experience although there have been forestry projects since 1979.

8. RECOMMENDATIONS

8.1 Regional analysis of extension experience

An issue that cuts across the entire spectrum of forestry projects in Asia is extension, or more precisely, the transfer of technology and tree planting incentives. A variety of strategies are being tried in Asia and their success has been mixed. The lessons are far from simplistic and no ready rules are available, such as private landowners will plant trees but the landless or squatters on public land will not. A great deal of our present understanding is inferred from casual observations rather than careful documentation. Particularly weak is the linkage between research and extension, even within projects. The ANE Bureau (ANE/TR) has already funded a modest study of regional forestry extension issues and this should help clarify what steps should be taken next. The justification for heavy investments in social forestry extension bureaucracies has yet to be made considering less costly alternatives using the NGO community.

A regional strategy is needed to examine each country's forestry extension and community participation experience. Such an analysis would focus on rural people who are already the target of community forestry programs. The methodology would have to be both practical and reliable for explaining observed levels of adoption of forestry interventions. Conventional surveys might have to be discarded and alternative techniques explored, such as rapid rural appraisal and time allocation analysis. The development of better methodologies for understanding local constraints to community participation is critical and AID/W, especially S&T, should devote special attention to this problem. Longitudinal studies of a selected sample of rural communities throughout the region should also be initiated, perhaps undertaken by Asian graduate students.

The F/FRED project is specifically designed to assist Asian institutions formulate regional research programs related to biological and social aspects of multi-purpose trees and agroforestry. In my view, USAID missions would benefit by encouraging Asian social scientists to participate in such an exercise and by including AID bilateral projects in the regional sample. Researchers associated with AID-funded farming systems research, as well as social forestry and upland watershed projects, might be appropriate participants.

8.2 More emphasis on indigenous tree species

In order for community forestry projects to promote sustainable land use practices, a diversity of trees should be used including many indigenous species. This is not given sufficient priority in

most projects. Inventories of what trees rural people are already planting, establishing better germplasm centers and research on the propagation and growth characteristics of indigenous tree species are particularly lacking. Often overlooked are the possibilities of hiring local biologists, such as plant ecologists and botanists, to assist with inventorying and germplasm bank establishment. Both international and local NGO's concerned with the conservation of biological diversity can play a key role in ensuring existing resources are identified, tested and preserved. The growing interest in the conservation of biological diversity by U.S. Congress gives AID a strong mandate to commit to these tasks.

The F/FRED project is designed to improve research methodology on multipurpose trees and to stimulate regional coordination and information exchange. An initial review of research priorities among Asian scientists already shows a strong interest in species trials which compare the performance of exotic and indigenous trees under a variety of conditions. This effort should be encouraged, but it will not be sufficient unless additional resources within bilateral projects are devoted to improving the availability of a diversity of tree species.

8.3 More investment in applied research

The growing challenge in Asia is how to develop land use systems for upland and marginal lands which can generate sustained benefits to rural people while at the same time, protect the resource base. In the context of increasing land use pressure and rapid degradation of soil and forest resources, research to meet this challenge should be given a higher priority. This means committing greater project funds to research and requiring more problem-oriented research during the project design stage.

Particularly important will be improving social science capabilities of Asian researchers and more socio-economic studies directed at identifying specific reasons for destructive land use. Simple assumptions regarding rural people's behavior and motivations have already misdirected many of the early projects. The general reluctance by Asian countries to undertake socio-economic studies is gradually changing, as reflected in the recent enthusiasm among forestry research institutions for the social science component of the F/FRED project.

8.4 Specific attention to inter-agency cooperation

There will always be tensions in rural development projects between different government agencies. However, the historic antagonism between forestry and agriculture demands special

attention during the design of upland agroforestry and social forestry projects. Mechanisms for reducing the tensions and experiments with conflict resolution might be appropriate. The Buhiagroecosystem workshop undertaken in the Philippines, which helped identify conflicts between officials and local people and the steps needed to mitigate them, might serve as a useful model. A commitment to inter-agency cooperation by the highest levels of government should also be cultivated.

8.5 More policy dialogue concerning natural resource management

Mission staff are often consumed with the immediate problems of managing their portfolio and there is little incentive to address the underlying causes of destructive land use practices. However, the apparent success of many agriculture and rural development initiatives will be short-lived unless natural resource management issues are grappled by developing countries. Among the most critical topics are: disincentives to investing in the reforestation of degraded public lands, the policies and conditions inspiring encroachment onto critical watersheds, promotion criteria and salary levels for forestry personnel, and inter-agency coordination at the district, provincial and national levels. The process of environmental profiling and the formulation of national conservation strategies by host country institutions should be encouraged as a means for policy reform. AID/W should provide clear signals to USAIDs that natural resource management is a priority for policy dialogue because of the potential impact on the long-term viability of rural development programs.

8.6 Greater participation by the private sector

Several project evaluations note the potential for NGO participation in field activities and technology dissemination. The experience of the Philippines is particularly encouraging and should be studied in greater detail. In addition, many studies of existing farming practices, inventories of biological resources used by rural people and market analyses of forest product trade could be undertaken by local universities or in conjunction with international scientific organizations. A constraint is the amount of USAID staff time needed to develop and supervise a collaborative program with NGO's compared to the amount of financial assistance involved. The experience of USAIDs in Latin America, particularly in Haiti, might prove instructive for how to overcome this management problem. A coalition of NGOs was formed to better absorb donor assistance for tree seedling dissemination. Another option might be hiring foreign service nationals to develop the contacts and to supervise NGO's involved in community forestry projects. The ANE Bureau is supporting the World Resources Institute's regional

workshop for Asian NGO's involved in grassroots forest conservation. One of the issues this workshop will address is what are effective mechanisms for working with large donor-assisted projects.

The privatization of some elements of community forestry efforts is necessary to ensure long-term viability of the programs. One of the most promising areas is the production of tree seedlings for forestry projects by small, private nurseries. Policy reform allowing more individual rights to trees and public lands in exchange for resource management measures should be pursued. These measures reflect the general need to infuse forestry projects with a stronger economic perspective where devices are sought to minimize the long-term costs to governments for maintaining these programs.

8.7 Project implementation should follow a phased approach

The characteristic of trees which profoundly influences community forestry projects is their slow growth relative to annual crops. Among the ramifications of this simple feature are the higher risk of failure and longer lag time before the success of tree planting can be assessed. These features make a careful, phased approach crucial for forestry projects. The experience in Asia to date demonstrates the value of emphasizing institution strengthening before undertaking large-scale field activities. Projects need built-in flexibility based on a system of monitoring and evaluation. Field activities should begin as small pilot efforts to develop skills at diagnosing local needs, testing mechanisms for local community participation in project decision-making and shaping project activities to meet those needs. In the long run, these skills will allow host country institutions to develop programs which reach more rural people.

In order to ensure projects take a phased approach, AID/W should authorize the Missions to design forestry projects with longer durations than five years in recognition that forestry projects will be slow to start and that tangible results may take several years. The F/FRED project, for example, has a ten-year time horizon which reflects a sustained commitment to this area. During the evaluation of AID staff performance, greater emphasis is needed on project implementation. Maintaining continuity, even when projects proceed very slowly and present many frustrations to USAID staff, should be encouraged. By building in effective mechanisms to monitor project progress and the flexibility to restructure components, large-scale failures should be avoided. The challenge is, of course, to convince Asian countries of the need to devote less resources to field activities and more to institutional strengthening and research, and to experiment with a variety of

8.8 More ecology and social science technical assistance

Although community forestry projects have traditionally relied on forestry experts for technical assistance, U.S. consultants with the necessary background and skills are in short supply. In some circumstances, ecologists and social scientists such as geographers and anthropologists would be more appropriate. One of the bestmechanisms to find technical assistance is already available through the Forestry Support Program established by AID/S&T. The expansion of FSP's roster to a greater variety of applied ecologists and to more social scientists is advisable. USAID staff also need to become more aware of the appropriateness and availability of such experts for their community forestry programs. AID/W should establish stronger links with the scientific community, particularly existing professional associations, in order to gain a better understanding of the role ecologists and social scientists might best serve.

8.9 The establishment of improved monitoring and evaluation systems

The development of effective M/E systems is particularly crucial for the forestry projects because of their experimental nature and the long lag time before results are available. A variety of techniques may be combined, including physical measurements of a sample of plantations, administrative reporting of completed tasks, interpretation of before and after aerial photography, rural income changes, and rapid reconnaissance or spotchecks. Case studies by local scientists were used effectively by several Missions to examine issues such as community participation. Longitudinal studies of a selected sample of participating villages are a critical means of monitoring subtle changes in resource use.

An active area of social science research in Asia is the development of improved techniques for rapid rural appraisal, time allocation analysis and related methods for monitoring local people's needs, project activities, and changes in household production patterns. For example, rapid rural appraisal techniques help decision-makers gain a better sense of the conditions and problems affecting local people. Visits to rural communities serve as the basis for sketching the relationship between agricultural practices, environmental conditions, economic climate and the socio-political composition of households. These techniques allow practical hypotheses to be generated about local people's needs and the role of trees in farming systems.

Knowledge is very fragmented about the techniques different countries are using. Universities in Southeast Asia have formed a regional network for studying people-environment interactions in

agricultural systems (see Rambo and Sajise, 1985). This work is partly supported by USAID bilateral projects (e.g., Khon Kaen University in Northeast Thailand has farming systems and agroecology research supported as part of the Rainfed Agriculture project). Results of such programs remain poorly integrated with rural development and extension programs, particularly with community forestry efforts. There is a need to develop operational measures of agricultural sustainability, economic viability and similar aspects of community forestry. Methods are also needed for better assessment of initial market conditions and the informal private sector in forest product trade. The mid-term and final evaluation of forestry projects requires considerably more emphasis by the ANE Bureau. There should be an active exchange of evaluation documents between USAIDs as well as of pertinent staff to participate in evaluations. The scope of evaluations should be broadened to include the technical, institutional, extension and policy issues identified in this report. Mission directors can spur this process by insisting on more data regarding the impact of forestry/natural resource initiatives. Of particular importance is the assessment of the institutional and technical approaches tried by a project versus alternative means for accomplishing the same purpose. For example, the expansion of social forestry extension should be weighed against the prospects and costs of relying on the private sector, particularly the NGO community.

8.10 Greater emphasis on tree product marketing

An economic perspective during the design and implementation of rural forestry projects has proved to be critical. The long-term economic, as well as ecological, sustainability of introduced technologies must be carefully scrutinized. A consistent weakness of the forestry projects is the failure to identify local prospects for marketing different tree species. The emphasis on domestic consumption of fuelwood and fodder has been found inappropriate because farmers assess the likely benefits of planting and managing tree crops on the basis of their commercial potential. Traditional patterns of forest use and tree cultivation were not well documented for most project sites prior to the introduction of new technologies. However, the study of existing practices and the traditional role of trees in farming systems can reveal features of tree species of particular importance to local farmers. These features might include, for example, low labor requirements during the busiest agricultural season or the ability of trees to produce marketable items during severe drought or flooding conditions.

In some cases, it may be necessary to improve market access or to protect against dramatic price swings by establishing cooperatives. Transportation infrastructure requires special attention given the remote location of many upland agroforestry projects. A critical factor affecting the long-term viability of some rural forestry efforts will be farmer vulnerability to price upsets for tree products. A guiding principle should be

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