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RAPTI INTEGRATED RURAL DEVELOPMENT PROJECT

HMG/USAID

NATURAL RESOURCES DEVELOPMENT

Report on

Forestry Sector
Soil Conservation Sector
Department of Roads Biological Stabilization Sector

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ABBREVIATIONS

ADB	Agricultural Development Bank
APROSC	Agricultural Projects Services Center
CFDP	Community Forestry Development Project
CFA	Community Forestry Assistant
DFC	District Forest Controller
DOF	Department of Forest
DOR	Department of Roads
DSCWM	Department of Soil Conservation and Watershed Management
GON	Government of Nepal
HMG	His Majesty's Government of Nepal
MFSCTW	Ministry of Forest and Soil Conservation Training Wing
MOF	Ministry of Forests
NFY	Nepal Fiscal Year
PCV	Peace Corps Volunteer
PF	Panchayat Forest
PP	Private Planting
PPF	Panchayat Protected Forest
RIRDP	Rapti Integrated Rural Development Project
SFDP	Small Farmer Development Project
USAID	United States Agency for International Development

I. INTRODUCTION

The Natural Resources Component of the Rapti Integrated Rural Development Project (RIRDP) encompasses three HMG line agencies assisting with natural resources development in Rapti Zone. The Department of Forest (DOF) is responsible for the Community Forestry Component; The Department of Soil Conservation and Watershed Management (DSCWM) for the planning, coordination, and implementation of improved soil conservation practices for the zone; and the Department of Roads (DOR) for the biological stabilization and protection of the immediate road corridors along the 200 kilometers of roads in Salyan, Pyuthan, Rolpa and Dang Districts.

Natural Resources Development was included in the Rapti Project, because of the severe deforestation and soil erosion resulting from over-exploitation and mismanagement of natural resources in the zone. The ever increasing population, steep mountainous topography, increasing cultivation on steep slopes, over-grazing of pasture land, and the destruction of forests has resulted in declining living standards for the people of Rapti Zone. In addition, the destruction and deteriorating condition of the environment has resulted in people migrating from the hills, either seasonally or permanently to Dang Valley or to the Terai, in order to find employment and supplement incomes.

In order to remedy the severe environmental degradation in the zone, and improve the quality of life for the people of Rapti Zone, His Majesty's Government of Nepal (HMG) requested assistance from the United States Agency for International Development (USAID) in the establishment of an Integrated Rural Development Project for the Rapti Zone. The Rapti Project was launched in August 1980. This report covers the accomplishments, achievements, constraints, and recommendations of the Natural Resources Component of the Rapti IRD Project.

Project Background

The Rapti Project was established as one of the HMG's approach to Integrated Rural Development. The purpose of the Rapti Project is to improve the quality of life for the people living in Rapti Zone, and increase the income, skills and production capacity of the rural people. The Natural Resources Component of the project has emphasized community participation in all reforestation and soil conservation activities.

The project area is located in the mid-western development region, and is comprised of one administrative zone. Located in the zone is one Inner-Terai District, Dang-Deokhuri, and four hill districts, Pyuthan, Salyan, Rolpa, and Rukum Districts. The total population of the zone is estimated at close to one-million people. Approximately three-fifths of the total population in the zone live in the four hill districts.

Financial assistance of approximately US$26.7 million has been provided by USAID through project agreement No. 367-0129. The project agreement was signed between USAID and the GON on August 12, 1980. Approximately US$ 2.5 million or 9 percent of the budget has been allocated for natural resources development in the zone.

II. COMMUNITY FORESTRY DEVELOPMENT

Community Forestry Development or social forestry has been defined as: "any situation which intimately involves local people in a forestry activity." In Nepal the vast majority of the population live in rural villages. For the typical farmer living in the middle hills, most are dependent on the forest for their daily existence. Farmers are dependent on fuelwood for cooking, timber for construction, fodder for their livestock, and other secondary forest products that have been incorporated into the local farming systems. For natural resource development to be successful in Nepal, one must actively involve the local people in all phases of the project. In addition, local communities must be persuaded that by protecting and managing the existing forest resources, the benefits and income resulting will be for the local community.

Objectives

As outlined in the Feasibility Study prepared by the Agricultural Projects Services Center (APROSC) the objectives of the community forestry component are to:

(a) Increase the supply of forest products including, fuelwood, timber, poles, and secondary forest products.

(b) Promote self-reliance amount communities through their active participation in local forestry development.

(c) Reduce environmental degradation and conserve soil and water resources.

(d) Shift predominant management responsibility for Panchayat Forest Lands from the Department of Forest to local communities.

(e) Change present forest products exploitation patterns by educating people as to the need for the protection of forests.

(f) Increase amount, sustainability and usefulness of forest resource yields.

(g) Change grazing and livestock management patterns by increasing stall feeding and introducing systematic grazing.

Legal Definition

In 1957 the GON nationalized all forest lands, with a view of preserving an important source of national wealth, and protecting existing forest land. The Department of Forest was responsible for the protection and management of all forest lands. However, because of the lack of trained manpower, staffing shortages, and budget constraints within the Department of Forest, most of the regulations were not enforced.

The Forest Nationalization Act was misunderstood by most of the people who believed the government had removed their right to free access, and use of the forest. Prior to the Forest Nationalization Act in many communities there were traditional systems of forest management. However, these traditional systems of forest management disappeared when people realized they would not benefit from the protection of the national forest lands.

In 1977 the GON amended the act to include local communities in the protection and regeneration of forest lands. Under the act new categories of forests were created--Panchayat Forest (PF) Panchayat Protected Forest, (PPF) Religious Forests, and Contract Forest were recognized. The government realized that if the destruction of existing forests was going to be slowed, local communities must be involved in management decisions concerning their forests. Below is a brief description of the four categories of forests that have been designated as Community Forests. These include:

(a) Panchayat Forest: "Any governmental forest area or any part thereof, which has been rendered waste or contains only stumps, may be entrusted by His Majesty's Government to any village Panchayat on prescribed terms and conditions for reforestation in the interest of the village community, and such forests shall be called Panchayat Forests."

(b) Panchayat Protected Forest: Governmental forests in any area or part thereof may be entrusted by His Majesty's Government to any local Panchayat on prescribed terms and conditions for the purpose of protection and proper management, and such forests shall be called Panchayat Protected Forests."

(c) Religious Forests: "Any governmental forest or part thereof located at any place of religious importance may be entrusted by His Majesty's Government to any religious institution on prescribed terms and conditions for the purpose of protection and management, and such forests may be called Religious Forests."

(d) Contract Forests: "Any governmental forest in any area or any part thereof which is devoid of trees, or has only stray trees, may be entrusted by His Majesty's Government to any individual or agency on prescribed terms and conditions for reforestation and for production and consumption of forest products, and such forests shall be called Contract Forest."

These new amendments to the Forest Act have allowed for greater community involvement in the reforestation and protection of existing forest areas. In addition, because forest land is now being entrusted to local communities for management, village motivation has considerably increased in the protection and conservation of existing forest resources.

The designation of PF and PPF as community forests has considerably increased villager motivation for conducting conservation activities. Under the present rules villagers can fix the rate and sell forest products. For PF lands the Panchayat receives 100 percent of the revenue. For PPF lands the Panchayat receives 75 percent of the revenue from the sale of forest products, and the remaining is returned to the government treasury. Both the PF and the PPF must be protected according to a prescribed management plan, and a minimum of 50 percent of the revenue generated from the sale of forest products must be allocated for development works within the PF or PPF.

✳ The category of contract or leased forests was designed to reach the small farmer and landless people. According to the clause the Forest Department can contract to small farmers, landless people, and small farmer groups such as the ADB sponsored Small Farmer Development Project (SFDP) for fodder and tree plantations. In addition, the clause allows for heavily eroded farm lands to be planted with multipurpose trees, which can be designated as contract forests.

~~There are~~ A number of constraints that ~~has~~ have slowed the implementation of contract forests. The present rules designating lands as contract forests are extremely complex. The DFC is responsible for identifying and surveying areas suitable for contract forests. However, the DFC does not have the authority to designate areas as contract forests. The granting of lands as contract forests must come from the DOF office in Kathmandu.

District Forest Controller

The GON is in the process of revising the rules and regulations of contract forest. It is expected that the existing rules will be simplified and it will be easier to implement the leasing government lands. However, until the present rules are changed, it will be very difficult to implement the contract forest program.

Requisites for success of Community Forestry Development

A number of conditions are necessary for the successful implementation of Community Forestry activities in the Nepalese hills. The selection of project areas should be based on both environmental and social factors. Community Forestry will only succeed in areas where the local community is aware of soil erosion and deforestation problems. In addition, Panchayats should be selected by the severity of the environmental degradation, and a willingness to participate in reforestation and soil conservation activities.

Community Forestry Development must maximize local participation in all forestry activities. In order to maximize local participation the program must be flexible, and change as the local conditions warrant. Finally, resource conservation is a long-term commitment, and the ultimate success or failure of the project will depend on the commitment and flexibility of the Rapti Project to respond to local situations.

Field Activities

The Rapti Community Forestry activities have been divided into field activities and infrastructure development. The main field activities include nursery establishment, forest demarcation, divisional nursery establishment, Panchayat Forest establishment, Panchayat Protected Forest establishment, National Forest plantations, Seedling production and Seedling distribution for private planting. Other field activities have included trainings of Nursery Supervisors, Forest Guards, and Seminars/Workshops for Pradhan Panchas participating in community forestry development.

In addition to field activities, infrastructure development has received considerable inputs during the first phase of the project. These supporting activities include construction of district and range office accommodations and staff quarters, one four-wheel drive vehicle, four Honda motorcycles, office supplies, and forestry equipment. Infrastructure development has had a positive impact on field performance and staff morale.

Table 1: Field Activities for 1980 - 1985
2037/038 - 2041/042

Field Activities	Unit	Target 1980-85	Target Achieved	% Target Achieved
Nurseries				
Panchayat Nursery Establishment	No.	60	32	54%
Divisional Nursery Establishment		7	5	72%
Panchayat Nursery Maintenance		52	32	62%
Plantations				
Panchayat Forest Plantation	Ha.	935	747	80%
Panchayat Protected Forest Plantation		6900	3010	44%
Departmental Plantation		590	389	66%
Total Plantation		9425	9146	44%
Demarcation	Km.	1260	202	16%
Tree Seedling Distribution	No.	400,000	370,000	93%
Nursery Foreman Training 1/	No.		2	
Forest Guard Training 1/	No.		1	
Seminars/Workshops 1/	No.		3	
Pradhan Pancha Observation Tour 1/			1	

1/ No targets established in the feasibility study.

The first five years of the Rapti Project will be completed in July of 1985. As shown in Tables 1, a number of conclusions can be drawn concerning overall project achievements in the Community Forestry Sector. A number of factors can be attributed to the slow start. Rapti Zone is a remote area, especially the most northern districts of the zone. (i.e., Rolpa and Rukum Districts). When the project started in 1980, the four District Forest Offices lacked the basic infrastructure and trained manpower to implement the new community approach to forest development.

Progress during the last two years has shown some encouraging results. The Department of Forest has assigned new personnel to all four district offices, and field achievements have considerably increased, especially this past fiscal year. The four District Forest Controllers (DFC's) assigned to Rapti Zone are young, energetic and trained in the community approach to forest development. In addition, there were four Peace Corps Foresters assigned in 1983 to assist the four DFC's in Rapti Zone with the implementation of community forestry activities. The four PCV's have recently completed their service. However, their positions have been replaced, and we now have three new PCV Foresters in Dang, Pyuthan and Salyan Districts.

The number of new nurseries established in the Zone has increased 50 percent over the last fiscal year. Altogether there are 32 Panchayat nurseries operational in Rapti Zone, and peoples interest continues to grow in the program.

The planting of 389 hectares of divisional plantation was accomplished in five years. All divisional plantations were planted on government land devoid of trees, and protected with barbed wire fencing. Seedling survival rates generally exceeded 70 percent, and quality of work was satisfactory.

The number of PF and PPF plantations turned over to village Panchayats has considerably increased over previous years, and the number of Panchayats applying for PF's and PPF's has substantially increased. The average seedling survival rate in most PF's and PPF's increased. The average seedling survival rate in most PF's and PPF's was 70 percent. The quality and quantity of seedling produced was considerably higher this past year. However, in some Panchayat nurseries the quality of work was quite poor, causing high mortality in the plantations. The main reasons for high seedling mortality rates in the PF and PPF plantations is because of infrequent field visits and poor site supervision at the village level.

The demaracation of PF, PPF and National Forest lands lagged behind other field activities. In the feasibility study 1260 km. of land was targeted for demarcation. However, lack of trained manpower and survey equipment (i.e., compasses, tapes) resulted in less than a satisfactory achievement in this activity.

This past year the free distribution of seedlings exceeded the target by almost 100 percent. Over the life of the project, 350,000 seedlings have been distributed to farmers, schools, and rural institutions for private planting. Fodder and multipurpose seedlings are in great demand by farmers, and has been an excellent way to increase villager participation in community forestry activities.

Staffing and Organization

The Department of Forest is responsible for the implementation of the Community Forestry Program. In Rapti Zone there are four Forest Divisions (i.e., Dang, Salyan, Pyuthan and Rukum Forest Divisions) The Pyuthan Forest Divisions includes Pyuthan and Rolpa Districts. However, in NFY 2042/043, Rolpa will become a separate Forest Division.

Rangers and Assistant Rangers are responsible for the implementation and supervision of community forestry activities in the Zone. Although there is no position of CFA (Community Forestry Assistant) as in the HMG/UNDP/FAO Community Forestry Development Project, Rangers and Assistant Rangers are the field technicians in Rapti Zone. A number of Rangers working with the Rapti Project have received in-service training from the Ministry of Forests and Soil Conservation Training Wing (MFSCTW) in community forestry development and other soil conservation trainings.

Other DOF staff responsible for the implementation of community forestry activities are forest guards, nursery naikes, and plantation watchman. They assist rangers with the implementation of a community forestry activities. Nursery naikes are responsible for the maintenance and operation of the Panchayat nurseries. Plantation watchman protect the PF and PPF plantations from domestic livestock and occasionally assist naikes with nursery operations.

Table 3: Community Forestry Development
Staffing as of July, 1985

STAFF	DANG	PYUTHAN	SALYAN	RUKUM
District Forest Controller	1	1	1	1
Attached Officer	1			
Accountant G I	1			
Accountant NG I	1	1	1	1
Junior Clerk NG I	2	2	2	2
Junior Clerk NJ II	6	6	6	6
Ranger	4	4	2	1
Assistant Ranger	16	11	6	6
Head Forest Guard	1	1	1	1
Forest Guard	44	33	30	29
Driver	1			
Typist	2	1	1	1
Peon	6	5	4	4
Nursery Supervisor 1/	12	9	8	3
Plantation Watchman 1/	35	15	12	2

1/ Temporary employees

Budget

A summary of total budget released and expenditures has been included in Table 4. The major portion of the forestry budget is reimbursable through USAID grant agreement No. 367-0129. In NFY 2038/039 and 2039/040, USAID financed the Regional Director's Office in Tulsipur. However, when the Regional Director's Office was moved to Surkhet in 1983, funding was discontinued.

During the first three years of the project, expenditures in the Community Forestry Sector lagged behind other line agencies within the Rapti Project. This was mainly due to staffing shortages and lack of trained manpower in the field. In addition, most of the Forest Department accountants were not familiar with the USAID reimbursement system, which caused serious delays in getting budgets released from Kathmandu.

Delays in the release of HMG budgets has been a major factor working against community forestry development in Rapti Zone. Late releases of budgets has resulted in work not being performed at critical times of the year, effecting the quality of work in the nurseries and plantations. In addition, the field workers have not received salaries for extended periods of time, which has had a serious effect on the morale and enthusiasm of the village-level technician.

Table 4

RAPTI RURAL AREA DEVELOPMENT PROJECT (367-0124)

FORESTRY DEPARTMENT BUDGETS, RELEASES AND EXPENDITURES

CODE COMPONENT	DISTRICT	TOTAL BUDGET	TOTAL RELEASED	TOTAL EXPENDITURES	EPND. AS % OF BUDGET	USAID EXPENDITURES	USAID % OF TOTAL EXPDS.
NFY 2037/38							
B-1 FOREST	DANG	449,000.00	102,850.00	51,853.00	11.50	51,853.00	100.00
	PYUTHAN	421,000.00	133,000.00	0.00	0.00	0.00	
	SALYAN	445,000.00	159,720.00	117.86	0.03	117.86	100.00
	SUB TOTAL	1,315,000.00	455,570.00	51,770.86	3.94	51,770.86	100.00
NFY 2038/39							
B-1 FOREST	DANG	1,068,946.00	38,912.00	142,659.51	13.35	142,659.51	100.00
	PYUTHAN	1,413,868.00	768,456.00	23,133.75	1.64	23,133.75	100.00
	SALYAN	1,286,966.00	569,371.14	43,715.68	3.40	27,052.68	61.88
	RAPTI CIRCLE	239,200.00	82,200.00	49,632.66	20.75	49,632.66	100.00
	SUB TOTAL	4,009,000.00	978,039.14	259,144.60	6.46	242,478.60	93.57
NFY 2039/40							
B-1 FOREST	DANG	1,424,000.00	476,437.00	410,364.69	28.82	410,364.69	100.00
	PYUTHAN	1,510,000.00	580,223.00	335,202.00	22.20	325,222.08	97.02
	SALYAN	1,372,000.00	557,821.00	251,336.83	18.32	251,336.83	100.00
	RAPTI CIRCLE	118,000.00	115,002.00	72,840.45	61.73	72,840.45	100.00
	SUB TOTAL	4,424,000.00	1,729,483.00	1,069,743.97	24.18	1,059,764.05	99.07
NFY 2040/41							
B-1 FOREST	DANG	862,000.00	849,000.00	811,036.01	94.09	811,036.01	100.00
	PYUTHAN	595,000.00	595,000.00	494,834.62	83.17	484,834.62	97.98
	RUKUM	363,000.00	359,300.00	121,177.28	33.38	113,954.68	94.04
	SALYAN	515,000.00	494,500.00	279,628.60	54.30	279,628.60	100.00
	NEP REG.	60,000.00	59,500.00	41,402.63	69.00	41,402.63	100.00
	SUB TOTAL	2,395,000.00	2,357,300.00	1,748,079.14	72.99	1,730,856.54	99.01
NFY 2041/42							
B-1 FOREST	DANG	1,396,000.00	1,396,000.00	143,555.84	10.28	143,555.84	100.00
	PYUTHAN	1,117,000.00	1,117,000.00	197,434.99	17.68	157,459.79	79.75
	RUKUM	449,500.00	392,500.00	17,662.80	3.93	17,662.80	100.00
	SALYAN	861,500.00	861,500.00	87,718.21	10.18	87,718.21	100.00
	SUB TOTAL	3,824,000.00	3,767,000.00	446,371.84	11.67	406,396.64	91.04

Table 4 Continued from previous page

RAPTI RURAL AREA DEVELOPMENT PROJECT (367-0129)

FORESTRY DEPARTMENT BUDGETS, RELEASES AND EXPENDITURES

PROJECT TOTAL NFY 2037/38 - 4041/42

CODE	COMPONENT	DISTRICT	TOTAL BUDGET	TOTAL RELEASED	TOTAL EXPENDITURES	EXPND. AS % OF BUDGET	USAID EXPENDITURES	USAID % OF TOTAL EXPDS.
B-1	FOREST	DANG	5,199,946.00	2,922,099.00	1,559,269.05	29.99	1,559,269.05	100.00
		PYUTHAN	5,055,868.00	2,714,279.00	1,650,605.36	20.78	990,650.24	94.29
		RUKUM	812,500.00	751,800.00	138.840.08	17.09	131,617.48	94.80
		SALYAN	4,481,486.00	2,642,712.14	683,520.18	14.78	645,854.18	97.48
		RAPTI CIRCLE	357,200.00	197,202.00	122,473.11	34.29	122,473.11	100.00
		REF. RES.	60,000.00	59,500.00	41,402.63	69.00	41,402.63	100.00
		GRAND TOTAL	15,967,000.00	9,287,792.14	3,575,110.41	22.39	3,491,266.69	97.65

Indicators to Measure Project Success

The Monitoring and Evaluation Unit of the Community Forestry Development Project has established some key indicators to measure project success. These indicators include plantation survival, private planting survival, and local management of community forest resources.1/ Community forestry development is relatively new to Rapti Zone. The oldest plantations were only established two years ago. Consequently, there is little information on plantation survival rates. However, this past year Mr. Robert Lueckel, Salyan PCV surveyed a total of 8 PF plantations in Salyan District. In addition, a number of plantation survival counts have been conducted in Dang and Pyuthan Districts. Table 5 gives some survival data for selected panchayats in Rapti Zone.

The Rapti IRD Project has incorporated the CFDP monitoring and evaluation system as a means of measuring overall project success in community forestry development. Plantation survival, private planting, and local management of community forestry development resources are excellent indicators to measure project success, and villager commitment to community forestry activities.

1/ For a description of this system see T.N. Bhattarai and J.C. Campbell, "Monitoring and Evaluation System for Community Forestry Development in Nepal. Field Document No. 4 (1982).

Table 5: Soae Plantation Survival Data

Planting Year	Location	(ha.)	Percent Survival	Species	Remarks
1983	Dang				
	Uranari	7	80	Luecaena leucocephala, Dalbergia sissoo	
	Amritpur	20	70	Dalbergia sissoo, Melia azedarach, Leucaena leucocephala	
	Rampur	20	45	Dalbergia sissoo, Leucaena leucocephala	Degraded site.
	Narayanpur	10	65	Delbergia sissoo, Melia azaderach	Seedlings small at planting
1983	Salyan				
	Pipelneta	10	70	Pinus roxburghii	
	Tharmare	8	65	Pinus roxburghii	
	Malta	5	64	Pinus roxburghii	
1983	Pyuthan				
	Khalanga	20	60	Melia Azedarach, Pinus roxburghii	
	Dakhakawadi	20	62	Daldergia sissoo	
1984	Dang				
	Uranari	6	80	Leucaena leucocephala, Dalbergia sissoo	
	Amritpur	20	70	Dalbergia sissoc, Melia	
	Harpur	10	85	Leucaena leucocephala, Melia azedarach, Leucaena leucocephala	
	Hekuli	10	85	Leucaena leucocephala, Melia azedarach, Dalbergia sissoo	
1984	Salyan				
	Khalanga	12	50	Pinus roxburghari	Grazing poor site selection
	Phalebang	8	35	Bassia butyracea	
	Tharamare	10	72	Pinus roxburghii	
1984	Pyuthan				
	Dharampani	15	35	Dalbergia sissoo, Melia azedarach	
	Khalanga	10		Dalbergia sissoo, Eucalyptus hybrid.	

Plantation Survival

From Table 5 a number of conclusions can be drawn from the data concerning plantation survival rates. The average survival rate for 1983 and 1984 was 67 percent. Considering the wide range of ecological conditions in Rapti Zone, the degraded plantation sites, and varied interest levels of local village Panchayats, 67 percent is a reasonable survival rate. However, plantation survival rates could well exceed 80 percent, if there was more emphasis on monitoring seedling quality in the Panchayat nurseries. The main causes of seedling mortality in the plantations according to rank are: small sized seedlings at planting, poor species selection, livestock grazing, lack of weeding, insect damage and fire. All of these problems could be avoided if there was better supervision at the Panchayat level.

All seedlings propagated in Panchayat nurseries come from locally collected seed. The planting of small sized seedlings is usually the direct result of poor supervision in the field. The timely collection and sowing of tree seed is essential if plantation survival rates are going to improve in the future. It is the single most important corrective action that can be taken to improve plantation survival. This fiscal year survival percentages should considerably increase over previous years, because additional field staff have received training in nursery operations and propagation of local tree seed.

Private Planting Distribution and Survival

To date, very little information has been collected concerning the distribution and survival of seedlings for private planting. In each Panchayat nursery a seedling distribution register is kept with information concerning the number of seedlings distributed to private individuals and rural institutions for planting. However, there has been no information gathered concerning the survival rates of the seedlings planted. Table 6 gives a list of the most widely planted species on private land. This information is based on two nurseries in Dang District, and the Department of Roads nursery in Pyuthan District. (i.e., Tulsipur, Rampur, and Tiram Panchayats).

This would be most interesting investigation from "planting incentive"

Villagers have been encouraged to plant trees on their own land, and along the boundaries of their land. Multipurpose fodder and some easily propagated fruit trees have been distributed to farmers free of cost. However, the project has not been able to meet villager demand for fodder and other multipurpose trees because of difficulty in local seed collection and technical problems in progagating fodder-tree seed.

Forest Management Plans

During the first phase of the project little emphasis was placed on the writing of forest management plans. However, according to the 1977 Forest Act, management plans must be written before PF's and PPF's can be entrusted to community control. The writing of forest management plans is a very important component of community forestry development, but the most difficult of all community forestry activities to implement.

The format for the preparation of forest management plans has been prepared by CFDP and approved by DOF. The plan represents a formal written agreement between the DOF and the village panchayat. The DOF prepares the forest management plan with assistance from a local forest committee. (Ban Samiti)

The existing PF or PPF is surveyed to determine area, volume, forest types, etc. A forest department ranger is responsible for the preparation of the forest inventory. After completion of the inventory the DFC, ranger and other interested officials work closely with the local Ban Samiti in prescribing a forest management plan based on villager needs, and the information collected during the inventory. Villager needs for fuelwood, timber, fodder, and other forest products are taken into consideration when writing the management plan. Both the DFC and the forest committee chairman must sign the management plan to make it a legal binding contract.

A total of only 7 management plans have been prepared in Rapti Zone. A number of reasons can be contributed to the slow start. Most forest department rangers lack the necessary skills to prepare forest management plans. Similarly, manpower shortages has have contributed to lack of progress in the important activity.

After meeting with the four DFC's in Rapti Zone, it was agreed that the writing of forest management plans should be emphasized this fiscal year. The writing of two management plans for each district in Rapti Zone has been proposed. In addition, we hope to send four rangers to a forest management training sponsored by the Ministry of Forests and Soil Conservation Training Wing (MFSCTW). The writing of forest management plans is critical to the program, and we hope to emphasize this important activity during the upcoming year.

Table 6: Most Widely Planted Species on Private Land

Spices	Local Name	Number of Seedlings Distributed	Predominate Uses
Dendrocalamus strictus (Bamboo)	Bans	6,894	Fodder, construction
Dalbergia sissoo	Sissoo	4,375	Fuelwood, timber
Pinus roxburghii	Salla	3,210	Fuelwood, timber
Sapindus mukorossi	Ritha	1,105	Fuelwood, soap making
Leucaena leucocephala	Ipil Ipil	455	Fuelwood, fodder
Melia azedarach	Bakaino	265	Fuelwood, fodder
Albizia procera	Seto Siris	228	Fuelwood, fodder
Eucalyptus spp.	Mashala	145	Fuelwood, timber
Delonix regia	Gulmor	85	Ornamental
Juniperus recurva	Dhupi salla	45	Ornamental, fuelwood

There is no information on survival rates for seedlings planted on private land. This fiscal year the three Forestry PCV's assigned to the Rapti Project will be conducting household surveys on the survival rates of some of the most preferred fodder and multipurpose seedlings distributed for private planting. This information will be made available as soon as the data is collected.

Motivation and Education

Community forestry development ultimately depends on the interest, motivation, and support of the local people in community forestry activities. In order to bring about awareness of community forestry activities, Rangers and village level staff are responsible for meeting with local officials, schools, and other rural institutions concerning Department of Forest activities. To assist Rangers with this important task flipcharts, booklets, posters, stickers, and leaflets designed by the CFDP office are provided free of cost to all participating Panchayats.

In addition, forestry and soil conservation filmstrips and the documentary film "The Fragile Mountain" has been shown in many Panchayats throughout the Zone. Audiovisual materials have proven to be a very useful extension tool. Similarly, the films tend to generate interest and much discussion about local community forestry activities. After showing the film The Fragile Mountain in Rijuwar Panchayat, the local high school constructed a school nursery, and produced 4000 seedlings for private planting.

Extension is an extremely important tool in community forestry development. However, a good extension program must coincide with a high standard of performance in the field. Villagers tend to look favorably on community forestry develop[illegible] there is a commitment from the DOF, and interest at [illegible] central level.

Training

Training courses for Nursery Foremen and Forest Guards has been an integral part of the community forestry program in Rapti Zone. Nursery Foremen trainings have been successfully conducted in 1984, (Tulsipur) and 1985 (Rampur). A total of 50 Nursery Foremen have received training in nursery management and plantation techniques. The Nursery Foremen training has greatly improved the management of the Panchayat nurseries, and the quality of work in both nurseries and plantations has considerably increased.

This past fiscal year the first Forest Guard Training ever conducted in the mid-western development region was held in Ghorahi, Dang. A total of 25 Forest Guards from all five districts in the Rapti Zone attended the training program. The trainees received instruction in community forestry, silviculture, forest utilization and management, wildlife protection, soil conservation, forest demarcation , forest law, and the installation of improved stoves. The training run for a total of three months, and the trainees were promoted to fourth class non-gazetted officers at the completion of the training program.

Forest Guards are village-level extension workers. However, most Forest Guards in Rapti Zone have never received any formal training in community forestry development. Consequently, most Forest Guards lack the knowledge and skills necessary to implement community forestry field activities. The Forest Guard training emphasized forest development works, and most of the training consisted of practical field exercises. Overall, the training was a huge success and an incredible morale booster for the Rapti Forest Guards. The success of community forestry is dependent on the field workers. Training for junior level staff is essential to the program, and an excellent way to improve upon field worker morale.

Last fall the project sponsored an observation tour for 25 Pradhan Panchas' participating in the Rapti community forestry program. The Pradhan Panchas toured the Nepal-Australia Forestry Project in Chautara (Sindhupalchowk District) and the WB/FAO Community Forestry Project in Pokhara. The purpose of the tour was to introduce key individuals in Rapti Zone to successful forestry programs. The tour proved to be very popular among the Rapti Pradhan Panchas, and will be included in next years program.

Project Constraints

The most obvious constraint to community forestry development is the long term commitment and budgetary inputs necessary to reverse the severe environmental degradation, resulting from years of mismanagement of natural resources in the Rapti Zone. A total of five years has elapsed since the project was inaugurated in August, 1980. However, five years is a very short time in considering forest management and land-use decisions. To reverse the existing trends of forest exploitation in Rapti Zone, the GON will have to support community forestry activities for many years.

Community forestry is dependent upon the active interest and motivation of local village panchayats. In many panchayats the local people have taken an active interest in community forestry activities, and the progress and achievements have been impressive. However, in other panchayats progress has been considerably less. In areas where the watersheds and existing forest cover are in reasonable condition, enthusiasm and support for the program has been extremely limited.

The environmental degradation facing the people of Rapti Zone is extremely critical. However, if community forestry development is going to have a lasting impact on the people of the zone, villagers attitudes and behavior concerning forest management practices must be altered. The project must be flexible to villager needs, and actively involve local communities in all management decisions concerning community forestry.

Summary of Recommendations

Below is a brief overview of the recommendations that could be included in next years program, to improve project efficiency and quality of work in the field. Most of the recommendations are based on personal field visits, and in meeting with project staff in the field. Recommendations have been listed under three headings; technical, social, and administration.

Technical

(a) The timely collection and sowing of tree seed is essential if plantation survival rates are going to increase in the future. Small-sized seedlings at planting time has been the main reason for high mortality in some of the PF and PPF plantations.

(b) In each district office a seed collection program should be started to allow for tree seed to be stored and collected on a systematic basis. Local tree seed should be made available to field staff at key times throughout the year.

(c) More emphasis should be placed on collecting and propagating multipurpose fodder and fruit trees for private planting. Many of the most desirable fodder tree species have been propagated in insufficient numbers to meet villager demand.

(d) Lack of proper supervision in some village Panchayats has resulted in poorer quality work in the Panchayat nurseries and plantations.

Technical (continued from the previous page)

(e) Poor species selection on some plantation sites has resulted in a very high mortality rates in some PF and PPF plantations.

(f) A total of only 7 PF and PPF management plans have been written, and turned over to village Panchayats. Most Rangers in Rapti Zone lack the necessary skills in the preparation in the writing of management plans. Training for Rangers and Assistant Rangers is essential if this project activity will improve in the future.

(g) All Panchayats where the project currently works should be surveyed to identify possible PF's, PPF's, and other lands suitable for reforestation

(h) Short trainings, seminars, workshops, etc should be conducted for village leaders and other interested villagers to bring about a better awareness of community forestry development.

Social Issues

(a) In many Panchayats throughout the Zone there is a lack of knowledge concerning community forestry development, and the benefits local communities obtain from PFs and PPFs. Extension efforts should be increased in all Panchayats where the project currently works.

(b) The preparation of forest management plans should be emphasized next fiscal year. Local Forest Committees should be established in Panchayats where there are PF and PPF plantations. The local committees should be encouraged to participate in all forest activities.

(c) More emphasis should be placed on private planting and villager participation in all plantation programs.

(d) More women should be included in forestry development works.

(e) The salaries of village-level staff should be linked with the District Panchayat rate.

(f) The local Ban Samitis should be given additional responsibility in monitoring and supervising all community forestry activities in the Panchayat.

Administration

(a) The late release of budgets has been the single biggest constraint to the community forestry program. The late releases have resulted in work delays seriously affecting quality of work in the field, and morale of field workers.

(b) The salaries of Nursery Foremen and Plantation Watchman should be increased. The current wage rate is Rs. 360/month, which is not sufficient considering the inflation rate in the Zone. The daily wage rate should be linked with the District Panchayat rate.

(c) A system of incentives should be included for all field staff. Both central office technicians and field workers should be rewarded for superior performance and hard work in the field. In-service trainings should be provided for all deserving individuals.

(d) There are presently nine donor agencies involved in community forestry development in Nepal. However, there is little formal communication between the RIRDP and other donor agencies working in forest development. This year the RIRDP should try and establish informal meetings with other donors to exchange ideas and discuss mutual problems.

APPENDIX 1.

COMMUNITY FORESTRY NURSERIES

	Panchayat	Year Constructed	
A)	**Dang District**		
	Urahari Hapur Amritpur Narayanpur	(1983) (1984)	2039/040 2040/041
	Bijauri Gadhawa Hekuli		
	Lalmatiya Laxmipur Phulwari Satiwara Palan Nagar	(1985)	2041/042
B)	**Pyuthan District**		
	Dakhakuwadi Khalanga	(1983)	2039/040
	Raspurkot Dharmapani Bijuwar Punya Khola	(1984)	2040/041
	Bhingri, Belbas, Khaira	(1985)	2041/042
C)	**Rolpa District**	(1985)	2041/042
	Liwang Khungri	(1983)	2039/040
	Gharti Gaun	(1984)	2040/041
	Ghoda Gaun Harjanga	(1985)	2041/042

(Community Forestry Nursery, continued from previous page)

	Panchayat	Year Constructed	
D)	**Salyan District**		
	Khalanga Sital Tabura Tharamare	(1983)	2039/040
	Phalabang Bani Khola Lek Pokhara	(1984)	2040/041
	Devistal Dopa Dharmakot Danbang	(1985)	2041/042
E)	**Rukum District**		
	Khalanga Chaurjahari	(1984)	2040/041
	Pwang	(1985)	2041/042

APPENDIX 2.

PANCHAYAT FOREST PLANTATION ESTABLISHMENT (HA.)

Dang District

Year	Panchayat	Hectare
1983	Narayanpur	10
	Hapur	10
	Urahari	10
	Amritpur	10
1984	Urahari	10
	Amritpur	15
	Hekuli	15
	Hapur	15
	Bijauri	10
1985	Urahari	10
	Amritpur	15
	Hekuli	10
	Hapur	20
	Bijauri	10
	Gadhawa	20
	Lalmatia	10
	Satuwi	15
	Phulwari	10

Pyuthan District

1983	Khalanga	20
	Dobhabarodi	20
1984	Dharmapani	15
	Khalanga	10
	Bijuwar	5
	Thapdanda	6
1985	Bhingri	3
	Beblas	3
	Khaira	1
	Dharamawati	3
	Dharmapani	40
	Thapa danda	20

(Panchayat Forest Plantation Establishment, continued from previous page)

Rolpa District

Year	Panchayat	Hectare
1983	Khungri	6
	Liwang	6
1984	Ghartigaon	1
1985	Ghartigaon	1

Rukum District

1984	Chaurjhari	16
1985	Chaurjhari	15
	Khalanga	15

Salyan District

1983	Sital Tabura	4
	Tharamare	8
	Khalanga	6
1984	Phalabang	5
	Bari Khola	12
	Lek Pokhara	14
	Sital Tabura	16
1985	Phalabang	12
	Bari Khola	8
	Lek Pokhara	15
	Sital Tabura	14
	Tharamare	8
	Khalanga	15
	Devistal Gapa	10
	Dharmakot	12
	Dangbang	11

APPENDIX 3.

SPECIES PROPOGATED IN COMMUNITY FORESTRY NURSERIES

Botanical Name	Common Name	Predominate Uses
Acacia catechu	Khayer	Fuelwood, timber
Acacia mearnsii	Black wattle	Fuelwood
Albizia julibrissin	Rato siris	Fuel & fodder
Albizia lebbeck	Kalo siris	Fuelwood & fodder
Albizia procera	Seto siris	Fuelwood & fodder
Alnuz nepalensis	Utis	Fuelwood
Bassia butyracea	Chiuri	Fodder, edible fruit
Bauhinia purpurea	Tanki	Fodder
Callistemon viminalis	Kalkiphul	Ornamental
Cassia fistula	Raj briksha	Fuelwood
Choerospondias axillaris	Lapsi	Edible fruit, fuelwood
Dalbergia sissoo	Sissoo	Fuelwood, timber
Delonix regia	Gulmor	Ornamental
Dendrocalamus strictus	Bans	Fodder, fuelwood, timber
Eucalyptus spp.	Mashala	Fuelwood & timber
Ficus clavata	Berulo	Fodder
Ficus hispida	Kharwa	Fodder
Ficus nemoralis	Dudhilo	Fodder
Ficus roxburghii	Nimmaro	Fodder
Ficus semicordata	Khanyo	Fodder
Fraxinus floribunda	Lankuri	Fuelwood, fodder, timber
Grevillea robusta	Kangiyo	Ornamental, fuelwood
Juniperus recurva	Dhupi	Ornamental, fuelwood
Leucaena leucacephala	Ipil Ipil	Fuelwood, fodder
Litsea monapetala	Kutmero	Fodder
Melia azedarach	Bakaino	Fuelwood
Melia azedirachta	Neem	Timber
Morus alba	Kaphal	Timber, fodder, edible fruit
Phyllanthus emblica	Amala	Edible fruit
Pinus patula	Salla	Timber & fuelwood
Pinus roxburghaii	Salla	Timber & fuelwood
Populus deltordes	Lahare pipal	Fodder & fuelwood
Prunus cerasoides	Paingyo	Fodder & fuelwood
Schima wallichii	Chilaune	Timber & fuelwood
Sapindos mukorossi	Ritha	Fruit is used for making soap.

APPENDIX 4.

GUIDELINES FOR PROJECT SUPPORT FOR COMMUNITY FORESTRY IN RAPTI ZONE

Responsibilities of the Panchayat

1) The panchayat must provide a site for the construction of a nursery. There should be at least one ropani of land for construction, and the site must have a permanent water supply. (ropani is equivalent to 608 sq. yds.)

2) People from the panchayat should assist with the construction of the nursery, and assist with tree plantings, and the protection of all plantations in the panchayat.

3) Formation of a Ban Samiti (forest committee) to plan, design and assist with all reforestation activities in the panchayat.

4) The Pradhan Pancha or other elected official from the panchayat should make a written request to the Department of Forest requesting a Panchayat Forest or Panchayat Protected Forest.

5) Assist the Department of Forest and Department of Soil Conservation with the protection of all plantations in the panchayat.

Responsibilities of the Forest Department

1) Supply all materials for the construction of the panchayat nursery.

2) Pay the salary of the nursery foreman (Rs.360/month) and pay Rs.(0.40)for every seedling raised in a polythylene tube in the nursery.

3) Demaracation of all Panchayat Forests, Panchayat Protected Forests, and Natural Forest land in the panchayat.

4) Supply a watchman (Rs.360/month) for every 10 hectares of plantation.

5) Provide the nursery foreman with a training, and provide technical assistance as needed.

6) Provide encouragement, advice and technical assistance to the local forest committee.

III. SOIL CONSERVATION AND WATERSHED MANAGEMENT COMPONENT

Deforestation and soil erosion in Nepal has received international attention in recent years. In Rapti Zone like most of Nepals populated middle hills, soil erosion is a very serious problem. Large scale gulling , sheet erosion, sediment field floodways and landslides are all on the increase. A great deal of erosion in Nepal is caused by natural phenomenon; The geologically young mountains, steep terrain, and the monsoon runoff are all causes of natural erosion. Nevertheless, the natural erosion process has been greatly accelerated through man-caused erosion. Listed below are the main causes of man-caused erosion:

(a) The human population pressure has put increasing pressure on existing resources, often resulting in increased soil erosion, and poor land use practices.

(b) The over-grazing of domestic livestock has had an adverse effect on existing pasture land and has accelerated soil erosion.

(c) Farmers have been clearing and cultivating more marginal land often on very steep slopes, resulting in landsliding, and destruction of agriculture land.

(d) The over-collection of fuelwood and fodder resulting in the destruction of existing forests.

(e) The lack of "conservation ethic" and illiteracy among the rural people has also contributed to some of the environmental degradation in the middle hills.

It is obvious that much of the man-caused or accelerated erosion are soil social problems. The Soil Conservation and Watershed Management component of the Project was included to reduce soil erosion and treat some of the most critically eroded sites in the Zone. However, the most important objective of the soil conservation component is to educate the rural population about the importance of soil and water conservation.

The Integrated Approach to Soil and Water Conservation

Soil Conservation and Watershed Management component cannot be treated as a single component, but must be integrated into an overall development scheme. For the typical Nepalese farmer access to pure drinking water, health care facilities education, and other services are extremely limited. In addition, poor nutrition, illiteracy, and lack of viable employment opportunities are problems facing the average farmer. Since much of the soil erosion in Nepal are man-caused or "social problems", soil conservation will only succeed, if these social problems are addressed. It is technically easy to

correct a gully or replant a degraded site. However, it is infinitely more difficult to teach people not to cause erosion. Further, the education of the rural population, and the introduction of a "conservation ethic" is essential if soil erosion is going to be reversed in Nepal.

Objectives

As outlined in the Feasibility Study prepared by APROSC the objectives of the soil conservation component are:

(a) Establish a Zonal Office in Tulsipur, Dang, and provide a staff of 30 by 1985.

(b) Develop a watershed management area for one small watershed (100 to 200 km) in Dang District in order to demonstrate comprehensive resource management planning.

(c) Treat 400 hectares of critically eroding land by using primarily biological controls and practices in all five district of Rapti Zone.

(d) Establish priorities for renewable resource management with the aim of contributing to the solution of community problems, and meeting the needs of the people.

Field Activities

The Rapti Soil Conservation Activities include nursery establishment, plantation, gully control, community water source protection, irrigation canal protection and realignment, roadside plantation, and the implementation of an extension and education program. In addition, a Zonal office and staff quarters for 10 people was constructed in 1983. On the side of the supporting activities a meteorological weather station was established in 1983, and daily weather information is recorded and sent to Kathmandu via project radio. The DSCWM office has also received one four-wheel drive vehicle, one Honda motorcycle, office supplies and forestry equipment.

Table 1: Preliminary Field Activities for 1980-1985

(2037/038 - 2041/042)

Field Activities	Unit	Target 1980-85	Target Achieved	% Tar Achie
Establishment of Weather Station	No	1	1	10
Construction of Office Building & Quarters (5 Buildings	No	5	3	6
Land-use Plan (Dang Valley Watershed)	No	1	1	10
Watershed Treatment & Plantation	Ha	400	600	15
Gully Control Irrigation Canal Realignment Community Water Source Protection Roadside Stabilization				
Conservation & Education 1/	No	800	1000	15(

1/ Trainings for farmers, pradhan panchas and village technicians. A total of 1000 farmers have received training in improved soil conservation priorities (i.e., terrace improvement, community water source protection, etc.)

Prior to the start of the Rapti Project, there were few soil conservation activities being implemented in the Zone. Furthermore, the DSCWM did not even have an office located in Rapti Zone.

In just over four years a considerable amount has been accomplished in the soil conservation component. A Zonal office was established in Tulsipur, Dang. The office is now staffed with 12 permanent employees, and soil conservation activities are now being implemented in all five districts of Rapti Zone. Most of the soil conservation activities completed have been of very high standard, and have had a positive impact on the people of Rapti Zone. However, considering the extensive degraded lands in the Zone, the completed soil conservation activities have only had a minor impact on slowing soil erosion.

Emphasis in the soil conservation component has been on treating the most severely eroded lands, and providing protection for community water supplies. Most DSCWM activities have been purposely placed close to large population centers, and have been very effective as demonstrative areas.

The overall approach to soil and water conservation has been a combination of biological stabilization and mechanical structures. Biological control techniques have included revegetation of degraded lands with tree seedlings, and the introduction of soil binding shrubs, grasses and bamboo. Mechanical structures have included gabion check dams which have been used successfully in gully control, landslide stabilization, and torrent control. A list of all DSCWM completed activities are included in Appendix 5.

Probably the most important works of the DSCWM is the education and extension program. Motivation and education of the rural population is extremely important of environmental degradation is going to be reversed in Rapti Zone. The DSCWM has made significant progress towards this important task. Technicians from the DSCWM have met informally with small farmer groups, and have explained DSCWM project activities, and the needs for soil conservation and watershed management. In addition, informal presentations have been conducted at high schools, village meetings and forestry training programs.

Although a considerable amount has been achieved in the motivation and education of the rural population, a great deal is still left to be done. In many communities there is still a poor awareness of the deforestation problems, and what can be done about it. Further, in many panchayats in Rapti Zone, people are no aware of the community forestry program. The important task of education and motivation will have to be continued and emphasized during the next phase of the project.

Staffing and Organization

The Department of Soil Conservation and Watershed Management is responsible for the implementation of the soil conservation program. The DSCWM is a department within the Ministry of Forests (MOF).

Table 2 gives a list of all staff assigned to the DSCWM in Tulsipur. The office is composed of 15 staff members. A total of 6 technicians are responsible for the implementation of the soil conservation activities, and the remaining works in administration.

Table 2: Department of Soil Conservation and Watershed Management

Staff as of July, 1985

Staff	Dang
Project-in-Charge G II	1
Assistant Soil Conservation Officer G III	1
Overseer NG I	1
Ranger NG I	1
Junior Technician NG I	2
Junior Clerk NG I	1
Junior Clerk NG III	1
Driver	1
Typist	1
Nursery Supervisor 1/	5
Plantation Watchmen 1/	20

Budget

Total budget released and expenditures has been summarized in Table 3. The major points of the DSCWM budget has been reimbursed through the Rapti Project.

Late budget releases has seriously effected the DSCWM program. Timely budget releases has been a problem since the start of the project. The first trimester budget is scheduled to be released in mid-July, but in practice does not arrive until November or December. The same can be said about the second and third trimester releases. This year the DSCWM received the third trimester budget with less than three weeks left in the fiscal year. The late release of budgets has seriously effected office morale, and can often result in unsatisfactory work performance in the field.

1/ Temporary employees.

Table 3

RAPTI RURAL AREA DEVELOPMENT PROJECT (367-0129)

DEPARTMENT OF SOIL CONSERVATION BUDGETS, RELEASES AND EXPENDITURES

CODE	COMPONENT	DISTRICT	TOTAL BUDGET	TOTAL RELEASED	TOTAL EXPENDITURES	EXPND. AS % OF BUDGET	USAID EXPENDITURES	USAID % OF TOTAL EXPDS.
NFY 2037/38								
B-2	DSCWM	RAPTI ZONE	0.00					
NFY 2038/39								
B-2	DSCWM	RAPTI ZONE	1,466,000.00	974,024.00	651,742.76	44.46	533,285.44	81.82
NFY 2039/40								
B-2	DSCWM	RAPTI ZONE	2,279,000.00	1,623,067.00	1,356,499.67	59.52	1,251,151.57	92.23
NFY 2040/41								
B-2	DSCWM	RAPTI ZONE	1,366,000.00	1,188,500.00	1,032,741.59	75.60	910,700.87	88.18
NFY 2041/42								
B-2	DSCWM	RAPTI ZONE	1,827,000.00	1,827,000.00	382,727.95	20.95	321,067.92	83.89
PROJECT TOTAL NFY 2037/38 - 2041/42								
B-2	DSCWM	GRAND TOTAL	6,938,000.00	5,612,591.00	3,423,711.97	49.35	3,016,205.80	88.10

Indicators to Measure Project Success

Last May two consultants from Washington (Dr. Douglas Smith and Dr. Alex Korns) visited the Rapti Project. The teams objective was to prepare a report on the RCUP and Rapti Monitoring and Impact Assessment Systems.[1]/ The team recommended two indicators for measuring the impact of soil conservation works. The fist, the number of hectares of agriculture land protected by streambed stabilization and gully control. The second, gully control protected as a percentage of large gullies in the project area.

In Rapti Zone only limited streambed stabilization works have been accomplished. On only two rivers have gabion walls been constructed tc protected agriculture land (Babai and Sisne Kohla). However, a total of 11 major gullies have been protected in the Project area.

1/ For a complete description of this system see A. Korns and D.V. Smith, Rapti/RCUP Monitoring and Impact Assessment Systems for the Rapti and RCUP Projects June 10, 1985.

Project Constraints

The DSCWM is responsible for the implementation of soil conservation activities in all five districts of Rapti Zone. At present there are only six technicians assigned to the DSCWM office in Tulsipur. The technicians assigned to the Tulsipur office are young energetic, and they have done outstanding work in the field. However, without additional staff members from Kathmandu, it will be extremely difficult to expand soil conservation activities. In addition, the lack of offices in Salyan and Pyuthan Districts will seriously hamper progress especially in the remote districts.

Much has been written about peoples participation, and the importance of motivation and extension in community forestry development. However, the lack of a permanent officer-rank extension specialist will be necessary, if additional progress is going to be made in the motivation and education of the rural population. The extension specialist could plan and organize education programs, and coordinate activities with other line agencies associated with natural resources development in Rapti Zone.

Summary of Recommendations

In only four years time a considerable amounts of progress has been achieved in the soil conservation and watershed management component. Soil conservation activities has been expanded to include all five districts of Rapti Zone, and most of the completed activities are of very high standard. Interest in the soil conservation component continues to grow, and there is a list of panchayats requesting assistance from DSCWM, especially in the activities of streambed stabilization, gully control, and trail improvement. Overall, the DSCWM has been very effective in Rapti Zone. Nevertheless, if progress is going to improve in the future, there are a number of technical, social and administrative issues that need to be resolved. Many of the technical and social issues mentioned under the community forestry section are problems that have been encountered by the DSCWM, and will not be repeated again in this section.

(a) If soil conservation activities are going to be expanded upon especially in the remote districts, additional technical staff must be provided from Kathmandu.

(b) A permanent extension officer should be hired and greater emphasis should be placed on the extension and education program.

(c) There has been only limited cooperation between DSCWM and other line agencies working with natural resources development in Rapti Zone. Better cooperation among line agencies (i.e., Department of Forest, Department of Livestock) would improve upon project efficiency, and reduce duplication of programs.

(d) The lack of project vehicles and motorcycles has been a constraint in getting field staff to visit project sites.

(e) The lack of offices in Pyuthan and Salyan Districts has seriously hampered project activities in the remote districts.

(f) A storeroom and additional quarter should be constructed in Tulsipur, to meet the demands of the DSCWM Zonal Office.

IV. DEPARTMENT OF ROADS BIOLOGICAL STABILIZATION PROGRAM

The Rapti Rural Roads Project administered under the GON's Department of Roads has received considerable USAID assistance in the construction of three secondary or "feeder roads" in Rapti Zone. The three roads presently under construction are the Tulsipur - Salyan Road, Ghorahi - Pyuthan Road, and the Chackchake - Rolpa Road. In January 1982, a revegetation program was initiated along the three Rapti roads, to minimize the negative environmental impact caused by the construction of the roads through the hills of Nepal. Landsliding, soil erosion, river sililation and damage of existing agriculture and forest land are all visible along the road alignment.

The revegetation component has emphasized plantations along the immediate road corridors. The planting program was initiated in NFY 2040/041. A total of 90 hectares of plantion has been established along the Ghorahi - Pyuthan and Chackchake - Rolpa Road corridors. The revegetation program has emphasized the planting of local indigenous species, and on facilitating natural regeneration whereever possible.

Objectives

The main objectives of the biological stabilization component are:

(a) The protection and stabilization of the immediate road corridors in order that the 200 km. of roads may be utilized to operate light trucks (5-7 ton) during the dry season.

(b) Reduce the amount of grazing by domestic livestock along the road corridors.

(c) Assist the local communities in developing a land-use plan for the forest, pasture and degraded lands along the road alignment.

(d) Coordinate with the Department of Forest and Department of Soil Conservation and Watershed Management in promoting soil conservation along the road corridors.

Field Activities

The biological stabilization program includes the operation of a large divisional nursery in Pyuthan District (i.e., Tiram Panchayat) and the revegetation works along the road corridors.

The DOR Khumaltar Nursery is the largest nursery in Rapti Zone. This past years seedling production exceeded 100,000 plants. The nursery has a full time staff of 10 and is managed by a highly skilled and motivated nursery foremen. The Khumaltar Nursery is our best managed and productive nursery in the Zone. Further, the nursery has distributed over 10,000 multipurpose seedlings free of cost to farmers and other interested individuals. The nursery has made a favorable impression in the surrounding communities, and people interest and enthusiam for the nursery and plantation program has been impressive.

The plantation program has emphasized biological stabilization along the immediate road corridors. A total of 90 hectares has been planted with indigenous tree species, and a few varities of grasses have been planted for quick ground cover, and for stabilization of the road cuts.

Seedlings survival on the roadside plantations has been impressive. Most of the roadside plantations have survival rates greater than 80 percent, which is considerably higher than the Zonal average for our community forestry plantations. In addition, most of the plantations along the road corridors are highly visible and the villages along the road alignment have reacted favorably to the revegetation program. Table 1 gives a list of all plantations completed along the road corridors. For the past two years revegetation works have been undertaken along the Tribhuvannagar - Pyuthan and Chackchake - Rolpa Road corridors. However, no revegetation works have been carried out along the Tulsipur - Salyan Road, because of staffing shortages, and lack of a DOR nursery on the Salyan road.

Table 1: Department of Roads Biological Stabilization (Ha) Plantations

Plantation Site (Ha)	Species Planted	No Seedlings Planted	% Survival
1984			
Tribhuvannagar - Pyuthan Road			
Rampur Panchayat (Harnok) (9 ha)	Pinus roxburghii, Melia Azedarach, Dendrocalamus strictus	11,700	85
Lahar Pani Panchayat (4 ha)	Pinus roxburghii, Melia Azedarach	3,700	30
Chorpani Khola (9 ha)	Dalbergia sissoo, Melia Azedarach	9,000	85
1985			
Rampur Panchayat (10 ha)	Pinus roxbourghii, litsea Monapetala, Dendrocalamus Strictus	10,567	
Lohar Pani Panchayat (Kamire) (15 ha)	Pinus roxburghii, Albizia procera, Leucaenaleucocephala	18,972	
Dharamawati Panchayat (9 ha)	Bauhinia purpurea, Dalbergia Sissoo, Albizia procera	9,622	
1984			
Chakchake - Rolpa Road			
Naya Gaun Panchayat (5 ha)	Delbergia Sissoo, Acacia catechu	6,000	40 (Extremely degraded site)
Naya Gaun Panchayat (5 ha)	Dalbergia Sissoo, Phyllanthus emblica	5,900	35 (Extremely degraded site)
Ghotibang Panchayat (6 ha)	Dalbergia Sissoo, Acacia Catechu, Bassia butyracea	5,800	95
Ghotibang Panchayat (4 ha)	Delbergia Sissoo, Acacia Catechu	3,500	90
Ghotibang Panchayat (3 ha)	Delbergia Sissoo, Acacia Catechu, Acacia catechu	3,500	85
1985			
Ghotibang Panchayat (3 ha)	Dalbergia Sissoo, Leucaena Leucocephala, Butyracea	3,443	
Ghotibang Panchayat (Dibang) (4 ha)	Leucaena Leucocephala, Dalbergia Sissoo	4,686	
Marsiwang (Lamachaur) (7 ha)	Dalbergia Sissoo, Leucaena Leucocephala, Dendrocalamus Strictus	6,700	
Bhingri Panchayat (12 ha)	[illegible]rgia Sissoo, Bassia butyracea [illegible]ena leucocephala, Litsea Monopetala	12,500	

Project Constraints

The DOR revegetation program was initiated in 1984, and in only two years the plantation program along the road corridors has made a visible impact. Over 90 hectares of degraded lands have been stabilized along the Tribhuvannagar-Pyuthan and Chakchake-Rolpa road corridors. The DOR's primarily responsibility is the maintenance and construction of the three secondary roads in Rapti Zone. The revegetation of over 90 hectares of degraded lands is a considerable achievement. Success in the revegetation component can be contributed to a very dedicated staff, and the support of Mr. Birendra Bahadur Deoja, Divisional Engineer whose cooperation and commitment to the revegetation program made the work possible.

As mentioned above the DOR is responsible for the construction of the three rural roads in Rapti Zone. However, the entire staff of DOR are engineers and overseers with little or no experience in reforestation and forest management. If additional progress is going to be achieved in the revegetation component a forester should be hired to work with the DOR, and coordinate the revegetation program. In the future the amount of supervision and monitoring of the completed revegetation works will greatly increase, and a permanent forester will be necessary to ensure that work continues in the revegetation component.

The lack of coordination with DSCWM and DOF has also hampered progress in the revegetation program. Because the DOR does not have staff trained in forestry and soil conservation close cooperation is essential to ensure a high standard of work performance in the field. However, this past year there has only been limited cooperation between the DOR and other line agencies working in natural resources development in Rapti Zone.

Summary of Recommendation

Listed below is a list of recommendations that could be included in next years program to ensure that progress continues in the revegetation program. Many of the technical and social problems encountered by DOF and DSCWM can also be applied to the revegetation program, and will not be repeated in this section.

(a) A permanent officer rank forester should be hired and assigned to the DOR to supervise and coordinate the revegetation program.

(b) Two new nurseries should be constructed, to allow for the expansion of the revegetation program.

(c) The planting of grasses should be attempted on severely degraded sites, and especially on the road cuts.

(d) The DOR should try and establish a close working relationship with DSCWM and DOF concerning all reforestation and plantation programs.

(e) Motivation and extension should be an integral part of the revegetation program.

Appendix 5: Department of Soil Conservation Activities 1981 - 1985 (2038/039 - 2041/042)

Field Activity	Location	Year
Building Construction		
Zonal-Office 3 Buildings	Tulsipur, Dang	2038/039
Land-use Plan		
	Amritpur & Laxmipur Panchayats	2038/039
Nursery Construction		
Tulsipur Panchayat	Raxachaur	2038/039
Rampur Panchayat	Balapur	2039/040
Bijuwar Panchayat	Punya Kohna	2041/042
Dangbang Panchayat	Kapurkot, Pakha Pani	
Masina Panchayat	Masina	
Gully Control		
Tarigaon Panchayat	Tarigaon	2038/039
Kavra Panchayat	Kavra, Salyan	2039/040
Bijauri Panchayat	Bijauri	
Khalanga Panchayat	Sitalpati, Salyan	2040/041
Tulsipur Panchayat	Raharepur	
Amritpur Panchayat	Tikari	
Tulsipur, Dang	Airport	2041/042
Khalanga, Pyuthan	Madichaur	
Dangbang Panchayat	Kapurkot	
Urahari Panchayat	Urahari	
Bhalakcha Panchayat	Musikot	
Irrigation Canal Rehabilitation		
Bijuwar Panchayat		2039/040
Manpur Panchayat	Bagausi, Dang	2040/041
Khanalga Panchayat	Sitalpati, Salyan	
Amritput Panchayat	Aswar	2041/042
Khalanga Panchayat	Sitalpati, Salyan	
Jangakot Panchayat	Madichaur	
Irrigation Canal Rehabilitation		
Laxmipur Panchayat	Sisne Khola	
Dhanauri, Dang	Budadabar	

Appendix 5 (Continued from previous page for Soil Conservation Activitie

Field Activity		Location	Year
Community Water Source Protection			
Khalanga Pyuthan Khalanga Salyan		Marke, Salyan	2040/041
Khalanga Pyuthan		Thapadanda	2041/042
Plantation			
Tulsipur Panchayat	(20 ha)	Lakure Khola	2038/039
Amritpur Panchayat Rampur Panchayat	(20 ha) (20 ha)	Aswar Balapur	2039/040
Amritpur Panchayat Laxmipur Panchayat	(20 ha) (20 ha)	Tarigaon	2041/042
Tulsipur Panchayat Laxmipur Panchayat Dangbang Panchayat Khalanga Panchayat	(25 ha) (25 ha) (10 ha) (10 ha)	Tarigaon Kapurkot Thapadanda	2041/042
Roadside Stabilization with Fencing			
Tulsipur Panchayat (5 ha) Khalanga Panchayat (10 ha)		Raxachaur Thapadanda	2041/042
Installation of Meteorological Weather Station		Tulsipur, Dang	2039/040
Extension & Education Program		Various Locations	Ongoing program

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