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COMMUNITY FORESTRY IN NEPAL: TOO LITTLE, TOO LATE?

Michael B. Wallace

HMG-USAID-GTZ-IDRC-FORD-WINROCK PROJECT
STRENGTHENING INSTITUTIONAL CAPACITY IN THE
FOOD AND AGRICULTURAL SECTOR IN NEPAL

FOREWORD

This Research Report Series is funded through the project, "Strengthening Institutional Capacity in the Food and Agricultural Sector in Nepal," a cooperative effort by the Ministry of Agriculture (MOA) of His Majesty's Government of Nepal and the Winrock International Institute for Agricultural Development. This project has been made possible by substantial financial support from the U.S. Agency for International Development (USAID) and the German Agency for Technical Cooperation (GTZ).

One of the most important activities of this project is funding for problem-oriented research by young professional staff of agricultural agencies of the MOA and related institutions. This research is carried out with the active professional assistance of the Winrock staff.

The purpose of this Research Report Series is to make the results of these research activities available to a larger audience, and to acquaint younger staff and students with advanced methods of research and statistical analysis. It is also hoped that publication of the Series will stimulate discussion among policy-makers and thereby assist in the formulation of policies which are suitable to the development of Nepal's agriculture.

The views expressed in this Research Report Series are those of the authors, and do not necessarily reflect the views of their respective parent institutions.

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COMMUNITY FORESTRY IN NEPAL: TOO LITTLE, TOO LATE?

Michael B. Wallace*

INTRODUCTION

Deforestation and the Fuelwood Crisis

Nepal's forest is disappearing. Villagers are cutting fuelwood for cooking and heating, farmers are clearing forest land for agriculture, and grazing animals are preventing neg trees from growing. Estimates indicate that the area of Nepal's forest decreased by nearly one-half--from 6.4 to 3.8 million hectares--in the last 20 years (UNDP/World Bank 1983), and forest volume has probably gone down even more. Overall growth rates are low, and have probably declined during the last 20 years. If current rates of deforestation continue, Nepal's forests will disappear in the next two decades (World Bank, 1978).

Nepal's per capita annual energy consumption--200 kilograms of oil equivalent--is among the world's lowest. Domestic use--cooking, heating, and lighting--accounts for nearly all energy consumed (Table 1). Fuelwood is the main energy source, and is likely to remain so in the foreseeable future (Table 2). Per capita fuelwood consumption is about 640 kg per year, or one cubic meter (Campbell and Bhattarai, 1982), and is probably declining as gathering fuelwood becomes more difficult. Forest growth is probably not more than two cubic meters (cum) per hectare per year. In 1964 forest growth was thus 12 or 13 million cum, while annual demand was about ten million cum. Now the situation is reversed; population is more than 16 million, and fuelwood demand has increased to 16 million cum, while forest growth is less than eight million cum annually.

As a result, the demand for fuelwood can no longer be met from net forest growth. The stock of the forest is being reduced by at least two percent each year to supply energy and other needs. As this stock dwindles, growth also declines. Each year more forest stock will have to be cut to meet demand, and the forest resource will dwindle even faster as consumption exceeds growth by greater and greater amounts.

Afforestation has been seen as the only practical solution to the rural energy crisis because Nepal lacks alternative sources of energy. Hydropower is Nepal's only known source of commercial energy, but although the theoretical potential is considerable and the hydroelectric

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transmission network is expanding, within the next 20 years not even all district centers--let alone the rural villages where most Nepalese live--will have access to electricity, and cost will prohibit widespread use for cooking. The animal population is theoretically sufficient to provide bio-gas energy for over six million people, but a variety of constraints indicate that bio-gas is a feasible energy source for fewer than three million, and even achieving half of this is not likely. Social and religious beliefs support family food preparation and limit use of economical community bio-gas plants; gas plants are expensive; and low winter temperatures in the hills inhibit gas production. Other possible energy sources--domestic fossil fuels, wind, geothermal energy, and solar radiation--will not be widely available in the near future.

FUELWOOD, FARMLAND, AND FODDER

While fuelwood consumption alone may be reducing the size of Nepal's forests, this is not the only demand being made on the forests: farmland and fodder demands are also significant.

Nepal's total area is slightly more than 14 million hectares and in 1981 its population was over 15 million, growing at over 2.6 percent per year. As the population grows, so does the demand for food and the resulting demand for farmland. Between 1964 and 1980, agricultural land increased from 1.7 million hectares to 3.1 million hectares (UNDP/World Bank, 1983), accounting for a significant share of deforestation.

Table 1. Energy Consumption, 1974-75 (000 coal ton replacement)

Source/Use	Domestic	Industry	Transport	Other	Total	Percent
Noncommercial						
Fuelwood	6204	-	-	-	6204	86.8
Husk	86	-	-	-	86	1.2
Dungcake	28	-	-	-	28	0.4
Vegetable waste	63	-	-	-	63	0.9
Total	6381	-	-	-	6381	89.3
Commercial						
Coal	-	52	5	8	64	0.9
Petroleum	217	67	310	20	614	8.6
Electricity	54	27	1	9	90	1.3
Total	271	145	316	37	768	10.7
Total	6652	145	316	37	7149	100.0
Percent	93.0	2.0	4.4	0.5	100.0	

Source: Energy Research and Development Group, 1976.

Table 2. Energy Consumption, 1970/71-1990/91 (000 ton oil equivalent)

	1970/71	1975/76	1980/81	1985/86	1990/91
Traditional					
Firewood	2055 (93)	2334 (92)	2606 (91)	2685 (89)	2693 (87)
Agricultural waste	42	48	54	55	55
Animal waste	16	18	20	21	21
Total	2113	2400	2680	2761	2769
Commercial					
Coal and coke	37	39	39	45	52
Petroleum fuels	62	83	120	153	188
Hydro-energy	5	13	25	55	93
Total	104	135	184	253	333
Total	2217	2535	2864	3014	3102

Figures in parentheses are percentages. Estimates assume 10 percent decline in fertility rates between 1970/71 and 1990/91, and introduction of more efficient stoves covering 50 percent of households by 1990/91.
Source: His Majesty's Government of Nepal, January 1980.

Table 3. Population(000), Food Production(000 mt), and Land Use(000 ha)

Year	Population	Food Production	Cultivated Area	Forest Area
1964	10010	3181	1700	6402
1970	11321	3331	1845	
1975	12834	3740	2326	4823
1980	14631	3684	3127	4099
1985	16680			

Sources: ADB, 1982; CBS, 1984; FAMSD, 1983; UNDP/World Bank, 1983.

Nepal is falling behind in its attempt to feed its growing population. From 1971 to 1981, population increased by an average of over 2.6 percent per year. During that same period, production of major foodgrains (paddy, maize, and wheat) increased by an average of less than 1.4 percent per year (Table 3). Nepal's food production has been increasing, but this increase has come mainly from increases in cultivated area and the number of crops per year, as per-hectare crop yields have generally remained stagnant. While potential increases in crop yields with improved seeds and chemical fertilizer have been demonstrated throughout the country, in the near future increases in agricultural production are likely to come from further increases in cultivated area, at the expense of the forest.

Fodder consumption continues to deplete forest resources, though recent evidence indicates that farm households are reducing their livestock holdings, perhaps partly in response to the increased costs of maintenance. Aside from direct consumption of fodder, grazing animals degrade forest resources by eating small tree seedlings, uprooting young grass shoots, and trampling both seedlings and new grass.

Fodder consumption and fuelwood consumption differ in one important respect: each year, people can cut more fuelwood than grows, but animals cannot eat more fodder than grows. Fodder is vegetable matter that has grown during the preceding year, while fuelwood may come from a tree that has grown for two or ten or a hundred years. Thus, the feedback loop providing information to livestock owners about the long run costs of livestock maintenance is more direct than the feedback providing information to people about the long run costs of fuelwood consumption.

The substantive reasons for the decline in forest resources are demands for fuelwood, farmland, and fodder; one theoretical reason is the common-property character of the forest resource. This common-property (open access) character is one of the results of previous government ownership and management policies.

HISTORY OF FOREST OWNERSHIP AND MANAGEMENT

The state exercised little control over forest use before 1957. The government encouraged individuals to convert forest land to agriculture as a means of extending state control over territory and increasing state revenue. As a result of limited state regulation, local villagers controlled forest use. Distribution of the benefits of local management may have been unequal, with local elites benefitting disproportionately, but at least villagers considered the forests their responsibility.

With a smaller population and a larger forest resource, net forest growth was probably greater than fuelwood and fodder demand, even though forest land was also being converted to farmland. Thus, there was no need to enforce formal property rights and regulate forest use, because the supply of forest resources was plentiful relative to demand for these resources. Enforcement of property rights is generally needed only when the supply of a resource is scarce relative to demand.

However, even though formal property rights may not have been needed in the past to control consumption, because supply then exceeded demand for the resource, this lack of property rights led to under-investment in the forest. Property rights are useful for controlling future as well as current consumption, and for encouraging current investment to insure future consumption. The lack of property rights meant that no consumer had any incentive to think about future consumption and invest in the forest resource. In economic terms, because supply exceeded demand at any price in the past, no one invested in the forest, even though they might have accurately predicted that future supply would exceed demand at a positive price, as is now the case.

In 1957 the government nationalized all forests "to prevent the destruction of national wealth and to nationalize private forests for their adequate protection . . ." (Regmi Research, 1978). Unfortunately, the government was unprepared to assume the technical and administrative responsibilities of forest ownership. Villagers reacted negatively to nationalization, believing that their traditional rights of access and use had been curtailed. As a result, local responsibility for forest protection disappeared. Whereas previously there had been communal responsibility for managing the forest, after nationalization no one took responsibility for managing this resource. Moreover, because there were no land records, villagers had a strong incentive to destroy the

forest so that the land could be claimed as private property after it was cleared and cultivated. As a result of inadequate government control and adverse local reaction to nationalization, Nepal's forests effectively became common property.

In an attempt to reduce the common-property character of the forest and the accompanying lack of management responsibility, the government, with financial assistance from the World Bank and other donor agencies, has begun a program to return formal control of forest resources to local villagers. Legislation passed in 1978 and 1980 provides for the establishment of new categories of forests to be managed by local communities, religious institutions, and individuals. If these provisions are widely implemented, local communities would be responsible for managing 1.5 million hectares--over one-third--of the existing forest.

In particular, Panchayat* Forests were defined as degraded forest areas entrusted to a village panchayat for reforestation in the interest of the village community. These forests are limited to 125 hectares in each community. The government (through foreign-aided projects) provides land, seedlings, and technical assistance, and in return for labor the community receives all income from the sale of forest products. Panchayat Protected Forests are existing forests entrusted to local panchayats for protection and proper management. They are limited to 500 hectares in each panchayat, and are similar to Panchayat Forests except that villages receive three-fourths of forest product income. Religious Forests are forests located at places of religious importance entrusted to religious institutions for protection and management. Leasehold Forests are the furthest step toward private ownership. These forests--which can vary from 2.5 hectares for individuals in Kathmandu to 68 hectares for institutions in the Tarai--allow lessees to reap the benefits of afforesting and managing degraded land.

Along with returning control of forest resources to local villagers, increased efficiency in fuelwood use is also incorporated into foreign-aided forestry projects through the introduction of improved stoves which can reduce fuelwood consumption by as much as one-half.

This paper illustrates that community forestry projects cannot by themselves be a solution to Nepal's rural energy crisis. Though the potential impact of community forestry is great, and actual efforts of the Ministry of Forestry and foreign aid projects are on a scale never before attempted, these programs will not solve the problem of deforestation. Their results will not even keep pace with the incremental fuelwood demands of the growing population.

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*A panchayat is a community-level administrative and political unit. Nepal has 2913 village and 23 town panchayats.

COMMUNITY FORESTRY POTENTIAL: TOO LITTLE

Most current afforestation efforts being carried out by the government are through foreign-aided projects designed to implement the community forestry legislation. Before examining the results of these projects to date, a review of the potential of community forestry is useful.

Nepal has about 3000 panchayats, each having a population of about 5500 people. Each person consumes about one cubic meter of fuelwood per year, so a typical panchayat consumes 5500 cum of fuelwood per year. If a panchayat took full advantage of the Panchayat Forest and Panchayat Protected Forest legislation (assuming that suitable land was available for both purposes), 125 hectares of new forest would be planted, and 500 hectares of existing forest would receive improved management. If projected yields from Panchayat Forests and projected increases in yields from Panchayat Protected Forests are realized, a community might increase local fuelwood production by 187-282 cum per year from Panchayat Forests (RCUP, 1985) and by 250-500 cum per year from Panchayat Protected Forests, or eight to 15 percent of total current consumption (Table 4).

Table 4. Local Fuelwood Production Potential

	Panchayat Forest	Panchayat Protected Forest
Total area	125 ha	500 ha
Fuelwood area (half fuelwood, half fodder)	62.5 ha	250 ha
Yield increase	3-4.5 cum/ha/yr	1-2 cum/ha/yr
Fuelwood increase	187-282 cum/yr	250-500 cum/yr

Source: RCUP, 1985.

This is not sufficient to reverse the decline in the overall forest resource. Even if the remaining national forest area did not decrease and continued producing fuelwood at its present rate, nearly 70 percent of Nepal's fuelwood demand would have to be met from Panchayat Forests and Panchayat Protected Forests to reverse the overall resource decline.

Moreover, this calculation optimistically ignores the fact that trees take time to grow. Villagers cannot expect to harvest these increased yields in less than ten years, and in that time the average panchayat's population will increase by nearly 30 percent if current growth rates continue. A program that increases the fuelwood supply by 15 percent while demand increases by 30 percent and the existing forest resource (area not covered by the community forestry program) declines by over 20 percent is better than nothing, but it is not a solution.

Thus, the potential of Panchayat Forests and Panchayat Protected Forests is not enough to solve the problem. The allowed areas and the expected growth rates of Panchayat and Panchayat Protected Forests are

simply not sufficient to keep up with the rising energy demands of the growing population, even without considering the slow procedures for establishing these forests. One alternative may be to implement the Leasehold Forest regulations on wide scale, or to allow forests on private land. Establishing leasehold and private forests could increase the forest area quickly if individual initiative can be mobilized.

Experiments indicate that improved stoves can reduce fuelwood consumption by as much as half. However, surveys indicate that the average saving in practice is 735 kg per year per stove (RCUP, 1985), or about 20 percent of average household use. The advantage of improved stoves is that benefits are realized as soon as villagers adopt them. However, population growth in seven years will outweigh the fuelwood savings resulting from every household in Nepal installing an improved stove.

Community forestry and improved stoves could increase fuelwood production and decrease demand by 28 to 35 percent in the next ten years. With a 30 percent population increase, the net impact would at best be a five percent reduction in demand. As about half of current consumption comes from annual growth and half from forest stock, this could reduce deforestation by ten percent, but would not reverse the overall trend.

Unfortunately and perhaps realistically, ongoing forestry projects do not have the legal limits of community forestry as their targets (see Tables 5 and 6). Current targets for ongoing projects are less than 15,000 hectares each of improved National Forests and Panchayat Forests, less than 45,000 hectares of Panchayat Protected Forests, and less than 15,000 hectares of other afforestation, for a grand total of less than 90,000 hectares by 1985/86. In addition, the target for construction and distribution of improved stoves is less than 20,000 units.

Even if all of these targets were to be achieved, the total fuelwood produced or saved as a result of these efforts would only be slightly more than 250,000 cum per year (see Table 7). This is less than two percent of current annual fuelwood demand, and less than the annual increase in demand resulting from population growth. Thus, the planned potential incremental fuelwood production and savings from ongoing forestry projects will not even meet the incremental demand from net growth in population during the time period of these projects.

Some project papers are quite candid about the impact on forestry:

> Although incremental production figures are large, they are only a small part of total demand. By the thirtieth year, incremental fuelwood production would only supply the needs of approximately 1.5 percent of the households in the areas within the vicinity of forest activities (USAID, 1980).

Table 5. Ongoing Forestry Projects

Donor	Project
FAO/UNDP/IBRD	Community Forestry Development and Training (CFDT)
ADB	Urban Fuelwood Planting (UFP)
HMG	Department of Forestry (DOF)
ADB	Sagarnath Forestry
USAID	Resource Conservation and Utilization (RCUP)
Australia	Nepal-Australia Forestry Project (NAFP)
USAID	Rapti Integrated Rural Development Project
HMG	Dept of Soil Conservation and Watershed Mgmt (DSCWM)
IBRD	Rasuwa-Nuwakot Integrated Rural Development Project (R-N)
CIDA	Karnali-Bheri Integrated Rural Development (K-BIRD)
ODA	Kosi Hill Area Rural Development Project (KHARDEP)
German/Swiss	Tinau Watershed Management
UNICEF	Small Farm Family Program (SFFP)

Source: UNDP/World Bank, 1985.

Table 6. Ongoing Forestry Project Targets, 1980/81-1985/86 (ha)

Project	National Forest	Panchayat Forest	PanchProt Forest	Other forest	Total	Improved stoves
CFDT	-	11,750	39,100	811	51,661	15,000
UFP	-	-	-	10,000	10,000	-
DOF	3000	0	0	1350	4350	-
Sagarnath	3700	-	-	-	3700	-
RCUP	2130	-	751	445	3326	350
NAFP	1000	1600	450	180	3230	-
Rapti	590	915	690	346	2541	200
DSCWM	1595	-	-	-	1595	-
R-N	1000	-	-	-	1000	-
K-BIRD	783	-	-	-	783	-
KHARDEP	516	110	68	-	694	-
Tinau	55	75	12	-	142	-
SFFP	-	-	-	-	-	1100
Total	14,369	14,450	41,071	13,132	83,022	16,650

Source: UNDP/World Bank, 1985.

Table 7. Ongoing Forestry Project Potential, 1980/81-1985/86

Fuelwood produced (forest) or saved (stoves) per year (cum)

	National Forest	Panchayat Forest	PanchProt Forest	Other forest	Improved stoves	Total
Units	14,369	14,450	41,071	13,132	16,650	
Fuelwood/Unit	2.0	4.5	2.0	4.5	1.2	
Total	28,738	65,025	82,142	59,094	19,980	254,979

Source: UNDP/World Bank, 1985; RCUP, 1985.

COMMUNITY FORESTRY PROGRESS: TOO LATE

Nepal's deforestation problem was recognized at least as early as 1954, when an FAO forestry expert reported:

> Deforestation is the rule, particularly in heavily populated areas where more cropland, grazing land, lumber and fuelwood are needed. Such deforestation frequently assumes disastrous proportions; the shortage of timber results in the use of manure for fuel, so that the unmanured land becomes impoverished, yields shrink, and erosion reduces the cultivable area. All of this forms a vicious circle that it appears difficult to break without a radical change in all such practices (Robbe, 1954).

Following nationalization of the forests in 1957, several laws were passed defining the government's authority over the forest, and regulating use of this resource. However, it was not until the late 1970s that the community forestry legislation was passed, and it is only now in the mid 1980s that national forest management is beginning to change. Meanwhile the population increased from 8.2 million in 1952/54 to 16.6 million in 1985, more than doubling in just over three decades, and consumption of forest resources increased in rough proportion.

The 1976 National Forestry Plan--which is only a plan suggested by the staff of the Department of Forestry, not a plan adopted as official government policy--belatedly stated:

> The tradition of using and managing the forests under ad hoc directions and circulars continued within Nepal [in the 1960s and 1970s] even though the Forest Department had been established in 1942. As a result, the scientific and orderly management of forests did not eventuate. The Forest Department had been ignoring the forests in the Hills regions and this has led to the deterioration of the watersheds which are now in very poor condition. Even in the Tarai, the forests have severely deteriorated because of the continued sporadic felling of trees by the timber merchants as well as the local people . . .
>
> A cursory review makes clear that both forests and forestry are in a critical situation. The time is long overdue to create an effective organization in order to muster public support and participation, as well as institute scientific management of forests in the best interests of Nepal and Nepalese society (NAFP, 1979).

Progress achieved to date in the community forestry projects is significant when compared to previous efforts to control forest use. Community forestry legislation has been implemented in some fashion in most of Nepal's 55 hill districts. Management plans have been prepared for some existing national forests and for forests to be managed by local communities. Panchayat Forests and Panchayat Protected Forests have been formally handed over to some local communities for protection and proper management. Nurseries have been constructed and are producing seedlings for distribution beyond project targets.

Unfortunately, progress on important project components--such as planting Panchayat Forests, implementing management plans for Panchayat Forests and Panchayat Protected Forests, and improving the management of existing national forests--is behind schedule. More importantly, progress is not keeping pace with population growth and the demand for forest resources. Earlier calculations indicated that if all afforestation projects achieved their planned targets, the rate of deforestation might be slowed by ten percent (Wallace, 1981). Population is growing faster than expected when that calculation was made, and projects have generally not achieved what may have been over-optimistic targets.

Actual achievements indicate that potential increases in fuelwood production hoped for in project plan documents will not be realized. Many projects are behind schedule, and few Panchayat Forests or Panchayat Protected Forests have been established and management plans implemented. Table 8 summarizes community forestry achievements for four of the largest forestry projects. Table 9 shows how these achievements might increase fuelwood supplies by 1991 (optimistically ignoring the fact that these increases will be available only after 1991), and Table 10 compares fuelwood increases with the growing demand.

These tables indicate that the community forestry program as it is being implemented through foreign-aided projects is not sufficient to provide fuelwood even for population increases in the project areas, let alone reverse the trend of deforestation. These projects will provide fuelwood for less than five percent of the increased demand resulting from population growth in the project areas by 1991. Even if per-capita consumption is overestimated by a factor of two, project outputs would have to be multiplied tenfold just to keep pace with the increasing demands of the growing population.

This analysis indicates that increasing the supply of fuelwood is not a solution to Nepal's rural energy crisis, at least not as that option is defined and regulated by the Panchayat Forest and Panchayat Protected Forest legislation. Even if Panchayat Forests and Panchayat Protected Forests could produce fuelwood at the rate of ten cum/ha/yr, Nepal would need two million ha of well-managed forest within the next ten years, and this is not possible in that time.

Improved stoves offer hope for immediate reductions in fuelwood use, but villagers have been slow to adopt these stoves, and so far they have made little impact on overall fuelwood use. Population growth is likely to outweigh any impact that improved stoves have on overall fuelwood consumption: even if by 1990 half the population adopted stoves that are two-thirds more efficient than those now in use, total fuelwood use in the country would not decrease from current levels (Wallace, 1981).

Table 8. Forestry Project Achievements to 1985

Project	Panchayat Forest (ha)	Panchayat Protected Forest (ha)	Improved National Forest (ha)	Seedlings distri-buted (no)	Improved stoves (no)
CFDP	7684	1587	-	1,788,551	6140
RCU	381	3049	724	193,827	458
Rapti	740	450	290		220
NAFP	1633	847	2871	208,310	-
Total	10,438	5933	3885	2,190,688	6818

Sources: HMG/UNDP/FAO, 1985; RCUP, 1985; USAID, 1985; NAFP, 1985.

Table 9. Annual Increased Fuelwood Production and Savings by 1991 (cum)

Project	Panchayat Forest (a)	Panchayat Protected Forest (b)	Improved National Forest (c)	Seedlings distri-buted (d)	Improved stoves (e)	Total
CFDP	34,578	3174	-	8525	7051	53,328
RCU	1715	6098	1448	924	526	10,711
Rapti	3330	900	580	-	253	5063
NAFP	7349	1694	5742	993	-	15,778
Total	46,972	11,866	7770	10,442	7830	84,880

Notes: (a) Panchayat Forest @ 4.5 cum/ha/yr;
(b) Panchayat Protected Forest @ 2 cum/ha/yr;
(c) Improved National Forest @ 2 cum/ha/yr;
(d) seedlings @ ((143 cum/ha)/30 yr)/(1000 seedlings/ha);
(e) stoves @ (735 kg/stove)/(640 kg/cum).
Calculations based on achievements to 1985.
Calculations assume all forests used for fuelwood, none for fodder.

Sources: HMG/UNDP/FAO, 1985; RCUP, 1985; USAID, 1985; NAFP, 1985.

Table 10. Annual Increased Fuelwood Demand and Supply by 1991

Project	Population (1981)	Population (1991)	Increased demand(cum)	Increased supply(cum)	Percentage*
CFDP	4,798,841	6,237,331	1,438,490	53,328	4.0
RCU	340,186	442,159	101,973	10,711	11.0
Rapti	877,325	1,140,310	262,985	5063	2.0
NAFP	540,408	702,399	161,991	15,778	10.0
Total	6,556,760	8,522,199	1,965,439	84,880	4.0

Demand based on per-capita annual consumption of one cubic meter.
*Percentage of increased demand met by increased supply.
Sources: CBS, 1984; HMG/UNDP/FAO, 1985; RCUP, 1985; USAID, 1985; NAFP, 1985.

EFFICIENCY, EQUITY, AND BUREAUCRACY

Community forestry programs are progressing for the same reasons that other projects progress: someone benefits immediately from the project--not from project output, but from project implementation and operation. Forestry projects provide jobs, not fuelwood.

In fact, forest regeneration can often be accomplished by simply leaving the forest alone--by keeping people and animals out. However, this is often difficult without planting trees to give the appearance of something being done, and planting trees provides the immediate benefit of jobs to villagers as well.

The jobs associated with forestry projects, like the jobs on other government and foreign-aided projects, are not allocated on the basis of productive efficiency or distributive equity. Local elites, such as panchayat leaders and village landlords, often control the allocation of the immediate employment benefits of community forestry projects. This both defeats the equity objectives of these projects and decreases local support among nonbeneficiaries, and may have long-term negative consequences for the community forestry program generally.

It will be extremely unfortunate if most future fuelwood and fodder benefits of community forestry are also obtained by the rural elite. The effect of this program would then be that poorer villagers would be deprived of their traditional rights to the common-property forest, and as a result their overall economic position would deteriorate.

Forestry projects have the same problems as other projects--the need to meet targets (seedlings produced or planted) rather than produce output (net addition to the volume of the forest). Administrative targets are easier to meet and to measure than net social benefits. As a result, seedlings are sometimes planted before they are large enough to have much chance of survival, because the targets are set in terms of seedlings produced or planted, or of area planted. When seedlings die blame can be shifted to the weather or other factors outside the project officials' control. Also, the fiscal year begins on July 15, which means that sometimes budgets for planting must be spent before that date, even if planting is not feasible until after more rain has come.

PRIVATE FORESTRY: A POSSIBLE SOLUTION?

One complementary program may be to encourage leasehold and private forestry on a wide scale. Current regulations limit private forest holdings to small plots of trees and effectively prohibit private forest management on a commercial basis. The Leasehold Forest provisions of the community forestry legislation have not yet been implemented except in a few isolated cases. As a result, there is no incentive for private entrepreneurs to grow trees on their own land or to lease and manage forests on public land.

There are difficulties with private and leasehold forestry. District Forest Conservators generally do not support private and leasehold forestry, because this would reduce their authority and control over forest resources. This may be one explanation of the lack of implementation of leasehold forestry. There may also be competition between

leasehold forests and panchayat forests--in many areas there is simply not enough land for both.

Unfortunately, it is perhaps a sign of villagers' growing dependence on government projects that there seem to be motivation problems in the one area near Kathmandu which has been tentatively designated as a leasehold forest. In theory, an individual or institution leases a plot of land at a nominal rate in order to plant trees and reap the benefits of harvesting fuelwood and fodder. In practice the government may pay lessees during the period when the trees are growing. This changes the character of the program entirely from one which could encourage enterprising individuals to one which simply provides low-paying forest guard employment.

However, some senior government officials are speaking out in favor of using private incentives through private or leasehold forests to increase and improve forest resources in Nepal. The Deputy Director of the Department of Soil Conservation and Watershed Management is hopeful that individual initiative can be harnessed for society's benefit:

> "Market forces are what's important now. So is political will, but you can't count on that. I would prefer to count on the market in preserving our forests. If we can promote these new models, some of these programs might click and really take off." (Weisman, 1985)

CONCLUSION

There is hope for Nepal's forests, but that hope should be based on a realistic assessment of possibilities. This paper indicates that current community forestry programs simply will not solve Nepal's deforestation problem and the consequent rural energy crisis. These forestry programs are fine as far as they go--they just do not go far enough. These programs should continue, but complementary programs--including private and leasehold forestry--should be added.

Nepal has hard choices ahead. Villagers must either find other energy sources, which will not be easy soon, or they must cut back on cooking.

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