

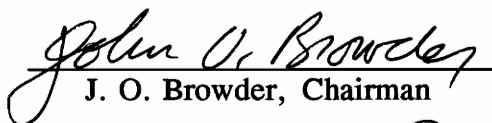
COMMUNITY FORESTRY IN NEPAL:  
A STRATEGY FOR DEVELOPMENT

by

Anjana Pandey

Major Paper submitted to the Faculty of the  
Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of  
MASTER OF URBAN AND REGIONAL PLANNING  
in  
Environmental Planning and International Development

APPROVED:

  
J. O. Browder, Chairman



---

Robert Dyck



---

Robert Adams

April 1992  
Blacksburg, Virginia

0.2

LD  
5655  
V851  
1992  
P363

0.2

COMMUNITY FORESTRY IN NEPAL:  
A STRATEGY FOR DEVELOPMENT

by

Anjana Pandey

Committee Chairman : John O. Browder  
Urban and Regional Planning

(ABSTRACT)

This paper examines community forestry as a solution to the deforestation problem in Nepal. A case study of the World Bank funded Community Forestry Development and Training Project is considered in the prevailing and the resulting literature. The long term sustainability of a community forestry project is the most important factor for community forestry projects to succeed. The conditions necessary for sustainability of community forestry projects in Nepal are presented. The most important conditions are incentives for wide local participation, clear property rights regarding the use of resources, and transfer of management responsibilities to the local people.

## TABLE OF CONTENTS

---

1.0. INTRODUCTION .....	1
2.0. LITERATURE REVIEW .....	4
2.1. Sustainability: A New Paradigm .....	4
2.2. Common Property Resource Management and the Theories of Tragedy of the Commons vs. Self Regulation .....	7
2.3. Community Forestry: Its Role in Sustainable Development .....	10
2.4. Criteria for Designing and Evaluating Community Forestry Project ....	12
3.0. THE SETTING OF COMMUNITY FORESTRY IN NEPAL .....	16
3.1. Geography and Socio-Economic Conditions .....	16
3.2. Political Dependency .....	22
3.3. Political Situation .....	24
4.0. FOREST DEGRADATION IN NEPAL .....	27
4.1. Causes of deforestation .....	28
5.0. HISTORY OF FOREST MANAGEMENT AND LAND TENURE SYSTEMS .....	33
5.1. Systems before 1957 .....	33
5.2. Systems from 1957 to present .....	35
6.0. INTERNATIONAL ASSISTANCE .....	41
6.1. A Case Study Of The World Bank Projects .....	43
6.2. Lessons Learned from Community Forestry Development and Training Project .....	49
7.0. CONDITIONS FOR SUSTAINABILITY .....	55
7.1. Incentives for Wide Public Participation .....	55
7.2. Clarification of property rights regarding the use of resources .....	57
7.3. Transfer of Management Responsibilities to the Local People. ....	59
8.0. CONCLUSION AND RECOMMENDATIONS .....	62
9.0. REFERENCES .....	63

## LIST OF TABLES

---

Table I.	Population Growth in Nepal (1920-1991)	21
Table II.	Internal and External Sources of Development Funds (million dollars)	23
Table III.	Changes in Area of Forested Lands (thousands of hectares)	27
Table IV.	Per Capita Annual Rural Household Fuel Consumption and Fuel Sources (kilogram) by Development Region	29
Table VI.	World Bank Forestry Lending, 1977-1989	44
Table VII.	The World Bank Supported Forestry Projects in Nepal	47

## 1.0. INTRODUCTION

Forests of the world are being depleted at an alarming rate (Postel and Ryan 1991). Once considered a limitless resource, forests are fast becoming scarce due to the increasing demand for their products. For a resource dependent country like Nepal, forest depletion can have adverse effects on its economic, social and environmental conditions and its overall development. Most developing countries are beginning to acknowledge these consequences and are taking steps to diminish pressure on their natural resources.

Afforestation programs carried out by the developing countries with financial and technical support from multilateral and bilateral agencies have been largely unsuccessful in increasing the total forested area (Postel and Ryan 1991). Most of the projects were "sociologically ill-informed and ill-conceived" and this has been the underlying factor contributing to the failure of these programs as well as most other development programs. The projects emphasized technical factors and economic models more than the people whose lives they affected most. Local people had little input in to the formulation of the projects, and if they were involved at all it was often as an afterthought (Cernea 1991).

It is now recognized that people's economic activities are embedded in the social structure and until the significance of social relations is realized the long term sustainability of a project is at great risk (Cernea 1989). In Nepal, forests have particular significance to

the rural population and provide innumerable benefits in the forms of fuelwood, timber, fodder and agricultural land. Of the current population of 19 million only 7% is urban (Population Reference Bureau 1991) and the remainder of the population is rural, deriving its livelihood from subsistence agriculture and forests, which play an integral role in the lives of these farmers (Mishra 1985).

Nepal remains a predominantly "precapitalist agrarian" society. Its economy is dominated by the rural sector and the important role played by forests in the rural farming economies is closely tied to Nepal's overall economic development (Blaikie et al. 1980). Future policies and investments in forests and forestry related activities may be the key to solving Nepal's socio-economic and environmental problems.

In the past thirty years the government of Nepal, with the help of multilateral and bilateral agencies, has undertaken numerous projects to reforest its barren hills. Continued decline at the rate of 3.9 percent per annum in the total forested area shows that these projects are not effective (Master Plan for the Forestry Sector 1988). Recently, in an effort to design effective projects, development professionals have started to explore the possibilities of involving the communities in the management of forest resources. Community forestry is an old concept that has been instrumental in maintaining sustainable resource use in many parts of the world, and is being revived in the present development context (Molnar 1981, Gregersen et al. 1989, Guggenheim and Spears 1991).

Development agencies and governments have also shifted their focus from industrial forestry operations and have begun to emphasize community forestry in their programs. Past community forestry programs have been plagued by many problems but none is greater than the problem of sustaining the community forestry activities after the financial and managerial assistance is withdrawn from the project (Guggenheim and Spears 1991).

Nepal has been one of the first developing countries to embrace the concept of community forestry and implement it as their forestry sector policy (FAO 1987). The purpose of this paper is to critically analyze the experience of community forestry projects in Nepal, as a basis for recommendations on how to conduct sustainable community forestry projects in the future.

This paper examines the concept of the term "sustainability" as it relates to community forestry (FAO 1987). Along with the examination of deforestation in Nepal from historical, political, and legal contexts, the paper also carefully examines the components of the community forestry approach as a solution to Nepal's deforestation problem. The changing policy of the Government of Nepal towards forest management is presented including the current emphasis on community forestry and its implications for the future.

## 2.0 LITERATURE REVIEW

### 2.1 Sustainability: A New Paradigm

Sustainable development was defined by the World Commission on Environment and Development (1983) as "development that meets the needs and aspirations of the present without compromising the ability of future generations to meet their own needs" (WECD 1987). Although the use of the term "sustainable development" has become quite controversial, it has become a key word in development literature today<sup>1</sup>.

The interrelationship between environment and development has been a subject of concern and challenge for many years. Marxist analyses looked upon environmental degradation as the necessary but unfortunate consequence of the development of capitalism. Early Marxist writings considered natural resources a commodity produced by applying labor to nature (Schmidt 1971). Therefore, nature had no value aside from that which determined socially. In essence, the value of nature was viewed as dependent upon the labor used in the production. It was believed that any natural resource becomes socially undesirable to produce before it becomes physically impossible to grow and a socially more desirable alternative would be found before the resource is depleted (Redclift 1987). Sustainability, therefore, would never become an issue.

---

<sup>1</sup> For a detailed analysis of the term refer to *Economic Analysis of Sustainable Growth and Sustainable Development*, by John Pezzy, The World Bank Environmental Department Working Paper No. 15, March 1989.

The neoclassical perspective on the environment can be divided into various schools of thought. For western capitalist countries, "development" has come to signify economic growth. Therefore, before 1960, the environment was regarded as a resource to be exploited without thinking of the consequences, and described by some as "Frontier Economics" (Boulding 1966). An opposite view to frontier economics is "deep ecology", which puts nature before humans, and emphasizes understanding of environmental processes. Deep ecology draws from various schools of thought that deal with the ethical, social, and spiritual aspects of the relationship between the environment and human socioeconomic activity. Although it has grown as a political movement, it is not widely understood or accepted by the general public (Colby 1989).

In recent years, the dominant paradigm in the western world is ecodevelopment. Ecodevelopment sets out to restructure the relationship between society and nature so that human activities can be coordinated to be synergistic with natural processes (Colby 1989). In the industrialized world environmental protection is related to pollution, destruction of habitat, and extinction of species. Although the debate over this subject has been going on for a long time, in recent years it has taken on a certain sense of urgency. Attempts are being made to integrate economics and environment, to ensure that the transformation of resources is taken into account. Attaching a price to the environment is controversial and professionals are eager to find an optimal and efficient way of doing so. Such attempts include setting up economic and social accounting systems to measure environmental indicators and measurements, creating models for the purpose of environmental planning

at national and regional levels, and various schemes of program evaluation such as cost-benefit analysis and environmental impact assessments (Archbugi et .al 1989).

Political interest in the subject has also increased. Political commitment to environmental protection started by the UN Conference on the Human Environment at Stockholm in 1972 went on to establish the World Commission on Environment and Development. The Commission's report (1987) "Our Common Future" is considered a pioneer effort on the subject of sustainability. It documented the major threats to our future and outlined the actions necessary to reverse the trend.

Every human activity involves the environment, ranging from complex industrial activities to subsistence agriculture (Hough and Sherpa 1989). In considering non-renewable resources such as oil the inevitable fact is depletion, and the only solution is to find an alternative resource that is renewable or is in unlimited supply. Renewable resources, especially forests, can be used without being depleted if properly managed.

The concept of community forestry management was initially explored as an alternative to top-down management for local forest resources in third world countries (Gregersen et .al 1989). Due to the heavy dependence of local people in these countries on the forests for their day to day living their interest in managing the resources is important in terms of long term sustainability of the management system. In many countries, forests are not privately owned, but they are state owned although the government control over the

resources is minimal and they exist as common property resources (Wallace 1988).

## **2.2. Common Property Resource Management and the Theories of Tragedy of the Commons vs. Self Regulation**

✓ The realization that local society plays an integral role in the management of natural resources in the third world has made scientists notice the traditional management systems that have existed over the years within these societies( Berkes and Farvar 1989). They have also come to realize that the commonalities between the traditional and scientific/modern management systems are far greater than the differences and there is a great potential for useful interplay between them for the benefit of the society as a whole.

Common properties have two distinct characteristics. First is that the exclusion of users from the resource is impossible and second, that resource use by one user is bound to have a negative effect on the other users. Therefore, common property resources have been defined as "a class of resources for which exclusion is difficult and joint use involves subtractability" (Berkes and Farvar 1989, Ostrom 1986, Fortmann and Bruce 1988).

There are two dominant theories regarding the management of common property resources - "tragedy of the commons" and "self-regulation" (Bromley and Cernea 1989, Chapagain 1984). Resource depletion in developing countries was attributed to "tragedy of the commons" or "free-rider concept" by Hardin (1968). According to this concept in the

absence of any control mechanisms, common resources are vulnerable to exploitation by humans for personal gain and are destined to total destruction. The only way of preventing this outcome is to either privatize all common lands or manage them by the central government. This theory asserts that since the natural resource is considered a "free good", every user will try to maximize his/her own profit without consideration for others or the environment. Based on this theory, Nepal passed an act that nationalized all the forested land in the country. The act is now considered to be the main cause of severe environmental degradation that has occurred in the past forty years (Bromley and Cernea 1989).

The other theory is often labeled as "neofunctionalism" or the theory of "self-regulation", and maintains that human beings are capable of managing their natural environment in a sustainable manner by instituting appropriate management systems (Bromley and Cernea 1989). According to the self regulation theory, a common property regime has a specific group size of resource users and rules governing the group. The people within the group cooperate to formulate rules and regulations to ensure sustainable use of the resource. Molnar (1981) first identified the existence of such traditional management systems in Nepal.

Although most of the forests in Nepal are state-owned, the villagers view them as communal lands. The villagers make decisions concerning the use of the forest resources and their management. There are many accounts of local management systems (Molnar

1981, Campbell et al. 1987, Fisher et al. 1990). The term "management system" is defined for the purpose of this paper as "a set of forest management practices (including protection, utilization, and distribution of products) and the institutional or organizational arrangements by which they are carried out" (Fisher et al. 1990:7).

Neither of the above two theories alone can explain the situation in Nepal. Hardin's theory of "the tragedy of the commons" not only underestimates the capabilities of the local institutions but it also fails to differentiate between "open access" (free-for-all) and "common property" (local institutional arrangements monitoring resource use) regimes (Bromley and Cernea 1989). In an *open access* situation there are no defined property rights and every individual acts independently to maximize his/her own gain. The right to use a *common property*, on the other hand, is equally distributed among its users and there exists a "social institutional arrangement" that prevents any one person from over exploiting the resource (Ciriacy-Wanthurp and Bishop 1978, Bromley and Cernea 1989).

The continuing destruction of the forests, however, discredits the theory of "self regulation". Although there is evidence of significant potential for the management of forest at the community level, it exaggerates the local capabilities. This theory ignores other socioeconomic factors including high population growth rate and policies that encouraged logging in the past. This theory also falls short of explaining the wide spread destruction of forests that led to their current state. Resource degradation in the developing countries while incorrectly attributed to "common property systems", actually starts with the dissolution

of local level management systems that regulate the use of the resources (Bromley and Cernea 1989).

Forest degradation in Nepal is, at least partially, a result of the dissolution of local level institutional arrangements whose purpose is to ensure sustainable use of the resource. This dissolution was brought about by, among other factors, the Forest Nationalization Act of 1957 which excluded the local community from the decision-making process regarding the management of the forest resources (Master Plan for the Forestry Sector 1988). Other factors that have influenced the destruction of the forests in Nepal include rapid population growth, dependence of the economy on agriculture, autocratic rule plagued by political instability, the geopolitical situation, rough terrain, general lack of planning, and lack of technical and financial resources.

### **2.3. Community Forestry: Its Role in Sustainable Development**

During mid 1970's, the world's perception of rural development changed drastically. It became increasingly apparent that the critical role played by forests in the lives of farmers in developing countries was ignored in conventional forestry projects. Sociological studies became important components of project designs and implementation processes. These studies showed untapped sources of knowledge among rural people about the management of local resources. In light of the newly found information, bilateral and multilateral donors including the World Bank initiated projects directed towards community forestry. They

urged the countries to reorient their policies to facilitate community forestry and encourage active participation of the local community in conservation efforts (Guggenheim and Spears 1991).

When community groups and landowners take an active role in forest related activities to provide forest products and generate local income, such activities are termed community forestry. Terms "community forestry", "social forestry", and "forestry for local community development" are often used interchangeably. Community forestry activities are varied and may include farmers growing wood to sell or use for firewood. They also include individuals collecting other forest products such as fruits and nuts for sale and governments or organizations planting trees for the benefit of the local communities (Fisher 1989).

Many of the above activities occur in Nepalese villages on a daily basis with or without external assistance. The only limitation facing the rural population is their abject poverty. When they have to worry about meeting their daily requirements for fuelwood and fodder, environmental protection becomes secondary. Therefore, external intervention has become a necessary factor in providing the much needed financial and technical help in the forms of subsidies, seedlings, and land. Community forestry activities not only provide employment to the local people, but also may help to solve the fuelwood crisis, as well as increase agricultural productivity by protecting soil and water resources and replenishing soil fertility, and help to preserve diverse flora and fauna found in the region (Dani and Campbell 1986).

Financial assistance would help expand on community forestry activities from basic sustenance to conservation. Guggenheim and Spears (1991) contend that if backed by proper agricultural incentives and policy reforms, forest conservation can contribute significantly towards resolving the basic issues of rural poverty. In the case of Nepal, external support is essential to developing strategies for forest management because the rural population is overwhelmed by their own state of poverty. However, the assistance program should do more than provide financial resources, it should institute a system that can be continued by the local population beyond the life of the project (Guggenheim and Spears 1991).

#### **2.4. Criteria for Designing and Evaluating Community Forestry Projects**

Monitoring and evaluation are an important components in any project. The objectives of monitoring are to provide timely information on the performance of the project and to generate information required for effective project management. Monitoring should be an ongoing process that is conducted throughout the life of the project and beyond.

Depending on the objectives of the project, criteria should be developed to assess the impacts of the project. These criteria should be unique to each project depending on the social and economic conditions of the area. They should not only address physical aspects, such as the number of seedlings distributed, but also the financial, managerial, and social impacts. Presented below are examples of important steps that need to be taken during the

design, implementation, and evaluation process (Cernea 1989, Gugenheim and Spears 1991, Gregersen et .al 1989, Hough and Sherpa 1989, Karmacharya 1988).

#### Design:

- Indepth sociocultural study or analysis
- Ensuring compatibility of the project with conditions in the target area
- Appropriate estimation of labor availability
- Consideration of women's roles, stratification, and ethnicity
- Attention to land tenure issues

#### Implementation:

- Wide level of participation in the project
- Use of existing cooperatives or participant groups
- Use of extension and outreach programs
- Flexibility during implementation

#### Monitoring and Evaluation:

- Ensure equitable distribution of benefits
- Increased level of awareness among locals
- Acceptance of project in the community

#### Policy Reform:

- land tenure
- agricultural productivity

The above-mentioned variables of analysis will be used to analyze the World Bank funded Community Forestry Training and Development Project in Nepal. Assessing cultural compatibility of the project is the most important criterion. Insufficient or inaccurate information has impacts on the design and implementation phase of the project and thereby the outcome of the project. Local communities, NGOs, and individual farmers are essential resources and their availability can have a substantial effect on the project. These human resources also have to be given proper roles without neglecting any group based on sex or ethnicity. Forestry projects are based on land, which is a limited resource to which the poorest usually do not have access. These projects usually benefit those who have land but are not necessarily the intended beneficiaries of the project. Therefore, special care must be taken in designing projects that distribute benefits equitably over the population.

While monitoring measures the rate at which the project is being implemented, evaluation is an assessment of the results. Therefore, monitoring serves the management of the project and evaluations serves a wider audience on the impact of the program. Long term evaluations are especially important for forestry projects because it takes a long time before benefits can be appraised (Gregerson et al 1989).

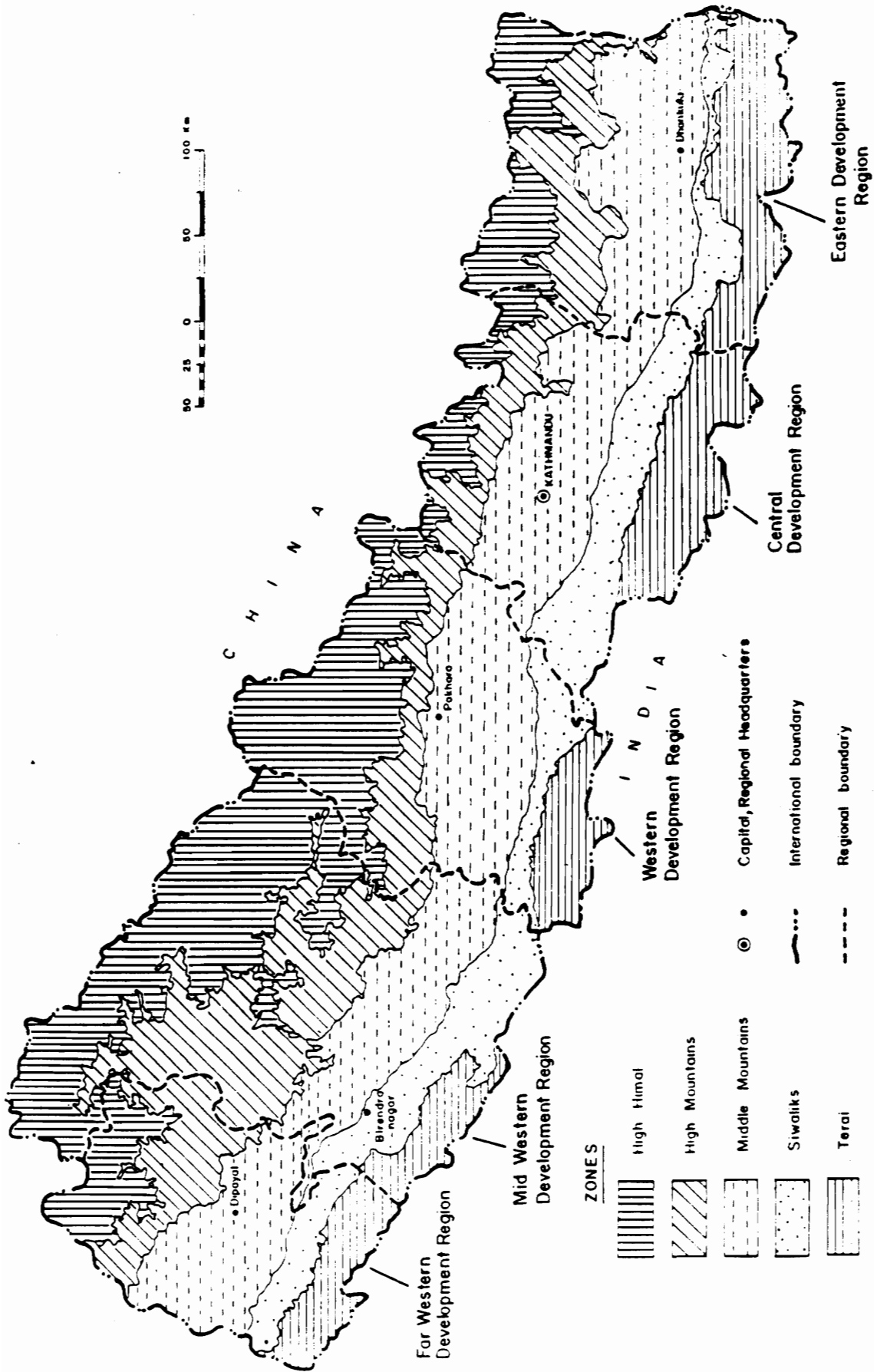
Policy reforms are necessary to provide the appropriate environment for any project. In Nepal, two important issues related to forestry projects are land tenure and agricultural productivity. Land is an essential factor for both agriculture and forestry. For those without land, no form of financial or technical will be successful.

### 3.0. THE SETTING OF COMMUNITY FORESTRY IN NEPAL

#### 3.1. Geography and Socio-Economic Conditions

Nepal is a rectangular country about 500 miles long and 150 miles wide, totalling about 14.75 million hectares. Roughly 80 percent of the total land area is rugged terrain and almost impossible to farm. Currently about 20 percent of total land area is under cultivation which is not sufficient to support the population. As a result, farmers are being compelled to bring marginal lands under cultivation. More and more hill slopes are turned to terraces for farming, further depleting forest cover and the support it provides the soil (Master Plan for the Forestry Sector 1988). It is estimated that at the present rate of resource degradation, Nepal will lose about 320-560 million dollars per annum by the year 2010 (Environment Resource Limited 1989)

Nepal can be divided into five physiographic regions (Map I). The northern Himalayan region is sparsely populated and the people depend on barter and pastoralism for their living, contributing relatively little to the GDP. The central three regions High Mountains, Mid Mountains, and the Himalayan foothills, *Siwaliks are collectively referred to as the hills*. The hills have traditionally been the settlement region and are home to some 60 percent of the population but only a quarter of the land is arable. Population density per unit area of cultivated land in the hills is extremely high and the entire hill region suffers from chronic food deficit (Bienen et. al 1990).



Source: Topographical Survey Branch, Department of Survey HM G Nepal, 1985.

MAP I Physiographic zones and development regions of Nepal

The flat southern *Terai* region is an extension of the Gangetic Plain. The *terai* accounts for about 20 percent of Nepal's total land area, and 70 percent of the land is cultivated. After the eradication of malaria in the 1960s, migration from the hills to the Terai has significantly increased. Over 30 percent of the country's population lives there. The Terai is regarded as the prime source of government revenue, produces a considerable grain surplus (Blaikie et al 1980). However, much of the surplus is exported legally or illegally, across the border to India. Rough terrain and poor road conditions make it difficult to transport the surplus to the hills (Seddon 1987).

✓ Even with about ninety percent of the population employed in agricultural activity contributing about 50 percent to the GDP, Nepal has been unable to raise agricultural productivity in the past two decades (World Bank 1991a). Although the overall GDP growth for the past 20 years has been 3.4%, real per capita, GDP growth has been only 0.75% per annum due mainly to the steady population growth. Although a recent World Bank report (1991a) contends that Nepal's economy is currently in transition out of subsistence agriculture, the structure of the economy has not changed significantly over recent years.

Agriculture in Nepal is characterized by low levels of capitalization and specialization together with high population density (Seddon 1987). Farms average about only 0.6 hectare in size and almost all farmers concentrate on grain production. Most of the land is owned by the rural elite resulting in extreme income disparities. With a population of 19 million

increasing at the rate of 2.7 percent, an increasing proportion of people are being driven below the poverty line (Seddon 1987).

In 1971, Nepal was classified as one of the least developed countries in the world. Like many other LDCs, Nepal is geographically isolated and has poor internal communications due to difficult terrain. As a result, Nepal suffers not only from extreme poverty, general lack of development, and dependence on large and relatively powerful neighbors, but also from considerable internal inequalities in the spatial and social distribution of resources and income (Blaikie et al. 1980).

Nepal's population growth rate of 2.7 percent is among the highest in the world. Census data (Table I) shows that the population has been increasing steadily since 1920. Uncontrolled population growth is the most prominent cause of extreme poverty in Nepal (His Majesty's Government 1990). If the present growth rate continues the population will double by the year 2020. The population is increasing so rapidly that any increase in the GDP is rendered insignificant. The labor force is also increasing at a rate which the agricultural land base unable to support. Uncontrolled population growth is exerting tremendous pressure on the natural resources (Seddon 1987).

The industrial sector, especially manufacturing, constitutes only a fraction of the Nepalese economy. Nepal is unable to compete with India in industrial production. The Nepalese government is bound by the Trade and Transit Treaty not to impose any controls

on Indian imports. Therefore, the Nepalese market is dominated by Indian products (The World Bank 1991a).

The trade sector's contribution to the GDP is not much higher than that of the industrial sector. However, import of foreign goods is significant. Most of the capital goods, raw materials, manufactured consumer goods, and lately even food grains are imported from India. These facts perpetuate the dependence of Nepalese people on their natural resources for every aspect of their lives.

Table I. Population Growth in Nepal (1920-1991)

YEAR	POPULATION
1920	5,573,788
1930	5,532,564
1941	6,283,649
1952-54	8,473,478
1961	9,799,820
1971	11,555,983
1976	12,837,028
1981	15,020,451
1991	19,100,000 (est.)*

Source: Central Bureau of Statistics, Population Census, 1987, Kathmandu, Nepal

\* Source: Population Reference Bureau, Inc, 1991, World Population Data Sheet.

### **3.3. Political Dependency**

Nepal has been geographically, economically, and politically dependent upon India since the British colonial times. However, Nepal retained its independence at the time it attained the status of a semi-colony which was politically and economically dependent upon the British colonialist. Despite supplying Britain with timber and other primary products and providing a captive market for its manufactured goods, Nepal did not receive any of the benefits of capitalist investments associated with colonization (Blaikie et. al 1980).

During the British occupation, industrial capitalism had begun to take root in India. Although initially "capitalist" industrial development was concentrated in terms of both location (especially Bombay) and sector (especially cotton textile production), with better transportation facilities, industrialization spread rapidly across India. Immediately after independence, Indian capitalists moved into the captive Nepalese market and have dominated the economy ever since (Blaikie et al. 1980).

Almost 90 percent of Nepal's export to India consist of primary products, and about 70 percent of the imports from India are manufactured goods (The World Bank 1991a). Nepal has made several efforts to diversify its trade in order to reduce its dependency on India, but being landlocked on three sides by India the success of Nepal's diversification depends on India's approval. The Trade and Transit Treaties between Nepal and India tend to regulate rather than encourage Nepalese exports. For example, in the 1950 treaty which

was renewed in 1989, Nepal had to agree to levy custom duties on all imports and exports at the same rate as those levied by India on its imports and exports. This provided a distinct advantage to the Indian industries which enjoy a technological edge and economies of scale (Gaige 1975). Many industrial and commercial enterprises in Nepal utilize Indian capital which further reinforces the dependency status of Nepal. This situation has halted Nepal's overall development in its path and increased pressure on natural resources.

Nepal's inability to generate capital and its balance of trade deficit has forced it to seek foreign aid to fund its development efforts. However, due to Nepal's strategic location between China and India, on many occasions, aid has often been used to achieve the political and strategic aims of donor countries rather than the specific needs of the recipient country (Blaikie et al 1980). In recent years, foreign aid to Nepal has increased and makes up approximately 50 percent of the development expenditures of the Government of Nepal (Table II).

Table II. Internal and External Sources of Development Funds  
(million dollars)

	1982/83	1983/84	1984/85	1985/86	1986/87
Development Expenditure	276	271	288	310	360
Internal Sources	161	137	147	136	203
External Sources	115	134	140	174	165

Source: Economic Survey 1987-88, Ministry of Finance, Nepal

A well developed transportation network to facilitate easy movement of people and goods is essential for the economic development of a nation and especially for equal distribution of resources across regions. In the case of Nepal, the topography has made the construction and maintenance of roads difficult and expensive. Nepal is totally dependent upon foreign aid and loans for the construction and maintenance of major roads and highways. Therefore, most of the financial aid received for development projects is often diverted towards road building and away from rural development and natural resource management (Stohr et al. 1981).

### **3.4. Political Situation**

Nepal has a long history of autocratic rule. Except for a brief experimentation with parliamentary democracy in the late 1950s, an aristocracy held the ultimate control of the affairs of the state until 1991. Most of the people in the higher ranks of both the army and the administration were substantial landowners who have invested in hotels, import-export business and other commercial enterprises. The aristocracy is a subset of a much larger ruling class of land owners (Blaikie et. al 1980). Until the beginning of this year, King Birendra had maintained his rule with the help of the royal family, the army, and the police among others (Rana 1982).

In 1956, following the royal coup, Birendra's father outlawed all political parties. He replaced parliament with the "Partyless Panchayat System" which has a four tier system of

"panchayats"<sup>2</sup> or councils, from the village through district and zonal assemblies, to the national level. The National Assembly consisted of one or two members elected from each of the seventy-five districts in addition to twenty eight persons chosen by the King (Rana 1970). Ministers were elected from among them to head the various ministries. The cabinet had little internal cohesion which resulted in little cooperation among ministers. This lack of integration affected even the district levels and undermined government's rural development policies. For example, if the irrigation ministry was digging canals at one end of a district, one could find the Agricultural Input Corporation, under another ministry distributing all its fertilizer at another (Bienen et. al 1990).

Although attempts were made to decentralize power, the bureaucracy in the central government made it almost impossible for the peripheral constituents to operate. In fact, decentralization has ended up centralizing the activities even further and giving way to corruption. Bribery is common in the government sector. Extremely low pay of the government employees provides incentives to give and receive bribery (Bienen et al. 1990).

In April of 1990, the people of Nepal revolted against the Panchayat System. The King lifted the ban on the political parties and agreed to become a constitutional monarch. On November 9, 1990 a new constitution went into effect which significantly reduced the powers of the royal palace secretariats. Elections for cabinet members were held a year later. This was a major change for Nepal. The power is now in the hands of the people,

---

<sup>2</sup> The smallest political and administrative unit under the Panchayat system.

and the opportunities are endless. However, judging from the events that followed the advent of democracy, the transition period is going to be long and rough. It is still too early to say if the change was good or bad for Nepal.

Political stability is essential for overall development of any country. In Nepal, the general public suffered under the hand of a few elites, but now under the democratic system, people can participate in the political process. It is the hope of the Nepali people that the new democratic government will provide the basic needs of the people. Increased standard of living, higher life expectancy, lower infant mortality rate, and better health care and education can help the Nepalese break away from poverty and start thinking about conservation of resources.

#### 4.0. FOREST DEGRADATION IN NEPAL

The current estimate of forest area in Nepal is around 5.5 million ha or 37% of the total area of the country (Master Plan for the Forestry Sector 1988). The forest area has declined for the past two decades at an annual rate of 4% (Table III). If the current trend continues Nepal's forest will be shrub in 35 years (Wallace 1988). The unstable geology created by the gradual northern movement of the Indian subcontinent coupled with the forest destruction and heavy monsoon rainfall has resulted in high rates of erosion and landslides (Eckholm 1976).

Table III. Changes in area of forested lands (Thousands of hectares)

	1978-79	1985-86	Difference	% Change	
				1964-69	Annual
Himalayas	154	155	+1	0.6	0.0
Mid-Mntns	1628	1634	+6	0.4	0.0
Hills	3236	3215	-21	-1.4	-0.1
Terai	587	445	-142	-24.1	-3.9
Nepal	5605	5449	-156	- 2.8	-4.0

Source: The Master Plan for the Forestry Sector, 1988.

#### **4.1. Causes of deforestation**

In Nepal, the main causes of forest destruction are the demand for fuelwood, fodder and agricultural land.

**Fuelwood:** The issue of fuelwood for domestic use in developing countries arose only after the "energy crisis" of 1973 (Bajracharya 1983, Eckholm 1976). Nepal's per capita annual energy consumption of less than 200 kg of oil equivalent is among the lowest in the world (Wallace 1988). The fact that fuelwood is the primary source of energy for thousands of rural Nepalese exerts tremendous pressure on the dwindling forest resource. More than 90 percent of the energy consumed is for domestic purposes. It is estimated that 708 kilograms of fuelwood in the mountains and 689 kg of fuelwood in the Terai are used annually for daily household energy requirements (Table IV).

Since other commercial sources of fuel are available in most urban areas, fuelwood consumption is relatively less there. Alternative sources of fuel such as electricity, kerosene, and natural gas are not readily available in rural areas. Difficult terrain and high transportation costs can drive the prices of such products beyond the reach of the local people. Therefore, fuelwood is going to remain the source of household energy for the rural people of Nepal for some time to come and they will be faced with a severe fuel deficit. The deficit will be met by overcutting accessible forests where they still exist. This trend will

Table IV. Per capita annual rural household fuel consumption and fuel sources (kilogram) by development region

	FWDR/ MWDR	WDR	CDR	EDR	Nepal
<b>Mountains</b>					
Fuelwood from:	548	743	484	829	640
Forests	455	379	290	323	378
Private Trees	93	364	194	506	262
Agr. Residues	47	93	149	65	96
Dung**	0	0	0	0	0
<b>TOTAL*</b>	<b>581</b>	<b>809</b>	<b>588</b>	<b>875</b>	<b>708</b>
<b>Terai</b>					
Fuelwood from:	479	482	474	483	479
Forests	445	434	384	348	388
Private Trees	34	48	90	135	91
Agr. Residues	14	27	56	106	63
Dung**	89	176	124	227	171
<b>TOTAL*</b>	<b>575</b>	<b>672</b>	<b>634</b>	<b>778</b>	<b>689</b>

Source: The Master Plan for the Forestry Sector, 1988

\* Expressed in fuelwood terms where one kg of agricultural residues is equivalent to 0.706 kg of fuelwood; and one kg of dung is equivalent to 0.97 kg of fuelwood.

\*\* Consumption of dung is less than one percent. Cattle dung is dried and used as fuel.

FWDR Far-Western Development Region

MWDR Mid-Western Development Region

CDR Central Development Region

EDR Eastern Development Region

cause irreparable damage to the environment unless distinct steps are taken to provide an alternative fuel source, reduce fuelwood consumption and institute effective afforestation programs throughout the country.

**Fodder:** Animal husbandry is an important component in subsistence agriculture. It is estimated that there are 14 million head of hoofed stock in Nepal, and they contribute 15 percent to the GNP in the forms of food, hide, labor, and other products (Mishra 1985). However, animal husbandry is also heavily dependent on forests for grazing and fodder. In Nepal, it is estimated that forests provide 28 percent of the total animal feed requirement. Overgrazing, therefore, has become another major cause of forest decline. Shortage of animal feed can cause malnutrition which decreases animal productivity. Malnutrition cause cattle to produce less milk which is an alternative source of income for many farmers and less manure which is the major fertilizer applied to the fields. Manure is also the cheapest form of fertilizer available to the farmers. In its absence, farmers may not be able to afford commercial fertilizers and the resulting decreased productivity of the land can have disastrous effects on the economic conditions of the people who derive their livelihood from farming (Pant and Jain 1972).

**Agricultural Land:** Some authors (Pant and Jain 1972, Rana and Thapa 1975, and Browning 1974) contend that the extension of agricultural area has been the principal cause of forest destruction. To meet the food demands of its growing population, Nepal has had to resort to clearing forest or bringing marginal land under cultivation. There was 34 percent growth

in area under cultivation during 1975-1980; about 90 percent of that increase is attributed to forest clearing and 10 percent to tillage on marginal lands (Chapagain 1984).

Forests hold together the soil and prevent it from eroding. When the forest cover is removed the top soil becomes unstable and easily erodible. The top soil contains all the organic material and most of the nutrients required for plant growth. Therefore leaching effects regeneration of forests on eroded land. The three main Himalayan snow-fed rivers that flow through Nepal carry about 240 million cubic meters of soil to the Indian Ocean (Bay of Bengal) each year (Eckholm 1976). Loss of soil has caused cereal yield to decline in spite of use of fertilizers, improved seeds, irrigation, and pesticides.

As depicted in the model in Figure 2, Nepal's subsistence economy is directly and indirectly dependent on the forest as an important provider of basic needs. Depletion of this valuable resource can effect the very existence of human population. Based on the current population and resource depletion trends, many analysts have concluded that Nepal faces an impending crisis. Blaikie, Cameron, and Seddon (1980), for example predict overpopulation, unemployment, exhaustion of important natural resources and eventual ecological collapse. These crises are manifestations of the vicious cycle that "makes poverty and low productivity self generating" (Myrdal and King 1971).

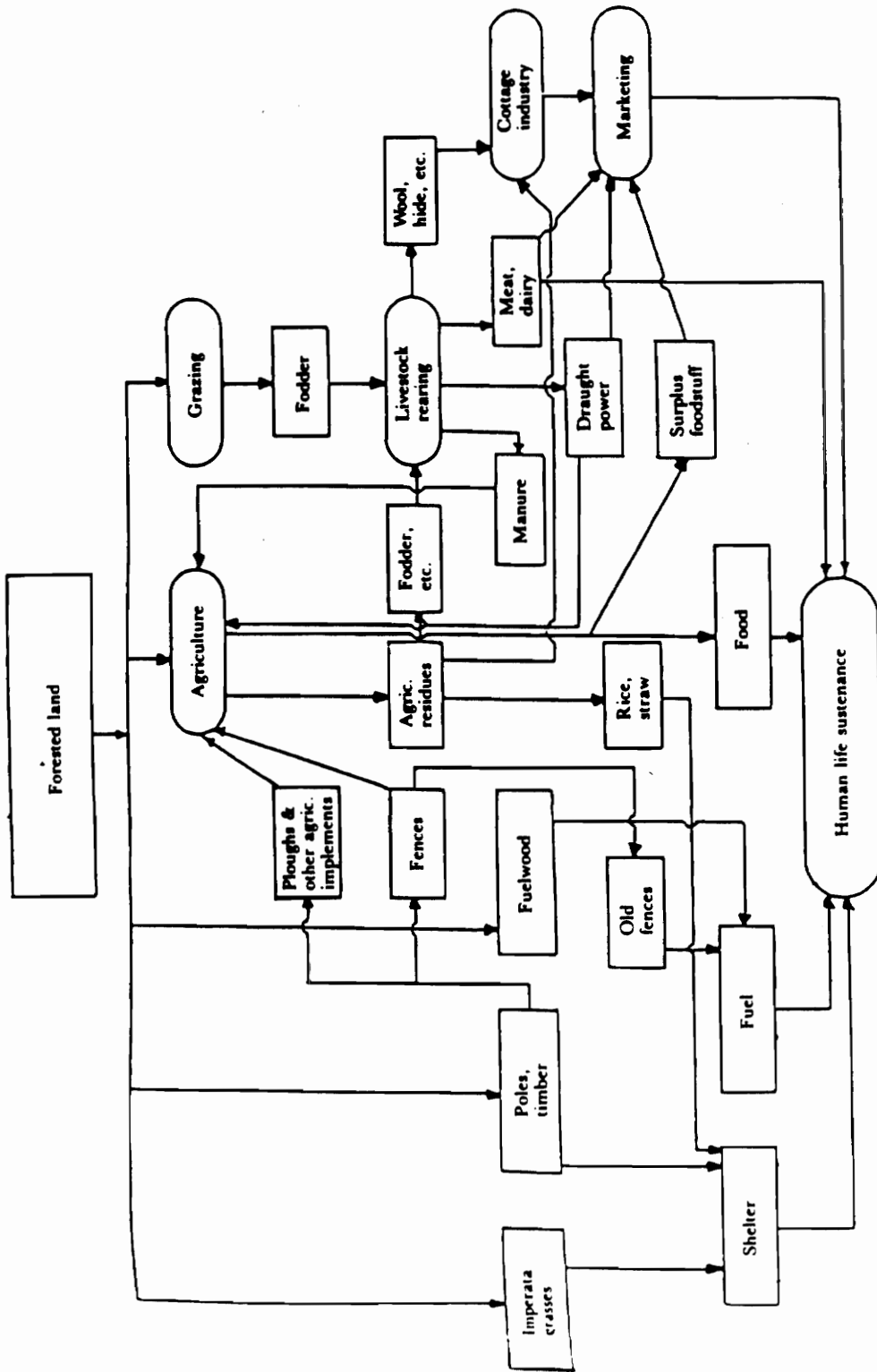


FIGURE 1. Model of the relationships between forested land and human life sustenance.

Source: Bajracharya, "Deforestation in the Food/Fuel Context: Historical and Political Perspectives from Nepal", *Mountain Research and Development*, Vol 3(3) 1983, pp227-240.

## **5.0. HISTORY OF FOREST MANAGEMENT AND LAND TENURE SYSTEMS**

The government of Nepal has made very little effort to direct policies and actions to promote land use patterns both to enhance people's sustenance and maintain the quality of the environment, despite the dependence on the forest for food, fodder, fuel and shelter in the rural economy of Nepal. This chapter traces the history of forest management and land tenure systems in Nepal since the early nineteenth century.

Land tenure becomes an important issue when considering common property resources. Land tenure can be formal or legal and informal or traditional. It gives the "right of access to different kinds of land, the rights to control products of that land, obligations to maintain the land, the rights of transfer, and the rights to determine changes in use of that land" (Molnar 1990:132). Tenurial arrangements effect the willingness of the people to adopt new technologies and invest their effort in adopting new practices depending on the benefits they as individuals can derive from it (Molnar 1990).

### **5.1. Systems before 1957**

One of the earliest accounts of the forests in Nepal was made by an writer, Colonel Kirkpatrick (1811), commissioned by the East India Company, to explore economic opportunities in the country, following the unification of the petty principalities into modern Nepal by Prithivi Narayan Shah in the late 1760's. Kirkpatrick noted the extensive spread

of the Terai forests and their underuse and possible benefits of exploiting it for the benefit of the British colonialists.

The primary reason for the maintenance of the forest in its wild state was for strategic protection against the invasion by the East India Company. The socio-economic conditions at the time also helped maintain the forest in that state, since most of the population living in the hills on subsistence farming produced enough to feed the immediate family (Bajracharya 1983).

After the mid-nineteenth century when the Ranas replaced the Shahs and ruled Nepal for 104 years, forest exploitation was carried out aggressively as a source of revenue generation. As a result during the period from 1852-1951, land revenue collections in the Terai region more than doubled. The Rana's efforts were based on the land grant systems with largest portions of the grant extended to various members of the Rana family itself. In the latter part of the nineteenth century, an expansion of the railway networks in northern India caused further clearing of the forest to meet those needs (Regmi 1978).

In the early 1950s, forests were perceived as abundant and government policy encouraged indiscriminant clearing of forests for timber and agriculture. The revenues derived from these activities were significant. However, the land tenure and taxation system made it impossible for peasants to break away from the subsistence level while the local elite groups manipulated the system to make the most out of it. In the hill region due to

the inaccessibility of the forests there was less opportunity for extraction of timber and thus these forests were not destroyed. Even after the Rana rule ended in 1951 the legacy of their social, economic, and administrative structure is still evident in the current system. The successive governments composed of non-Rana leaders were unable to implement effective policies (Joshi 1990).

Land tenure systems that existed before 1957 are rather vague, however, there seemed to be two main types of landownership: *raikar* and *kipat*. *Raikar* or state ownership had three types of ownership. *Birta*, which was land granted to individuals as a favor; *guthi*, which was land designated for religious purposes; and *jagir*, which was land assigned to government employees. *Kipat*, on the other hand, was communal land ownership. The legal status of the forests was not always clear and state had little control over their use especially the hill region (Fisher et al 1990). The current land tenure systems are based on these past systems. The government of Nepal after a thirty year experimentation with centrally managed forests is on the process of transferring back the responsibilities to the users with the hope that they will do a better job than they did in managing the resources.

## **5.2. Systems from 1957 to present**

In 1957, the government enacted the Private Forest Nationalization act to protect, manage, and conserve the forests for the benefit of the entire country. However, the Act ignored the traditional communal rules that had regulated forest use for decades. It

fostered distrust and suspicion of the people towards the government. The government was not prepared to assume the necessary administrative responsibilities of forest ownership and the local elites who owned the forests clear cut to save their land from being nationalized.

This decree was enacted in anticipation of cooperation from the people. However, the government failed to clarify the conditions of the Act regarding the use of the forests and their products (Wallace 1988). Due to lack of appropriate communication channels most of the remote villages were never made aware of the Act. Thus in many parts of Nepal, people are still operating under the old tenure systems (Bajracharya 1983).

The first conscious effort to assess the problem of deforestation was made after the pleas made world wide during the UN Conference on the Human Environment in 1972. A Task Force on Land Use and Erosion Control was established within the National Planning Commission to study the level of degradation. The study released in 1974 recognized the severe pressure of population on the land resources. Due to lack of baseline data and other important background and technical information the Task Force fell short of making any broad policy statements and its recommendation focused on afforestation (Bajracharya 1983).

The findings of the Task Force were reflected in the Fifth Five year Plan (1975-80). It included policies formulated to determine the pattern of commercial and domestic consumption of wood and adopt appropriate policies, abolish the present system of

auctioning, clear-cutting, and marketing trees and implement plans according to the regional development schemes, plant trees for conservation and development of forest resources and establish a separate department to control soil erosion on a large scale (National Planning Commission 1975).

However, the National Forestry Plan of 1976 first mentioned involving the local community in the forest management. The government recognized that forest management requires the help of the people and formulated community oriented policy according to the Forestry Plan of 1976 (Joshi 1990).

New legislation was adopted that defined new categories of forests to be managed by local communities. The national forests were classified into four ownership categories:

1. Panchayat Forests.
2. Panchayat Protected Forests.
3. Leasehold Forest.
4. Religious forests.

The Panchayat and Panchayat Protected Forests are *kipat* or communal land according to the traditional tenure systems. The Panchayat forests were degraded forests areas of about 125 ha entrusted to a village panchayat for reforestation by the village community. The government provides seedlings and the village keeps the income from

forest products. Panchayat protected forests were forest of about 500 ha entrusted to the local panchayat for protection and proper management. The communities are given incentives to maintain the Panchayat protected forests through shareholder arrangements with the village panchayat receiving three-fourths of the income from sale of forest products and the government receiving the remainder. Religious forests the same as *guthi* are under the protection of religious institutions. Leasehold forests previously *jagir* are degraded forests entrusted to individuals or agencies for reforestation and harvesting of forest products (Fox and Fisher 1990). After the Panchayat System was abolished in 1991, panchayat is no longer considered a political unit. Therefore, the panchayat forests have now been renamed as "community forests".

The 1988 Amendment of the Panchayat Forest and Panchayat Protected Forest Rules adopted the concept of usergroups. However, it still allows village panchayats the power to form user committees, formulate forest plans and dissolve user committees if plans are not followed. A Village Panchayat is too large an administrative unit to represent small user groups and therefore can not make decisions suitable for individual user groups (Fox and Fisher 1990).

The Master Plan for the Forestry Sector, developed by the Ministry of Forests and Soil Conservation in 1988, with aid from Asian Development Bank and FINNIDA is considered the most important step taken by the government of Nepal as a commitment to manage forest resources through public participation. Its major objective is to meet the

basic need of the people for fuelwood, fodder, and timber. The Master Plan proposed to meet this objective by (Bonita and Kanel 1988):

- improving the productivity of some 1.1 million ha of existing forests through intensive forest management by the State and communities.
- expanding the wood production base by establishing some 0.5 million ha of State, community, and private plantations, and
- reducing the rate of growth of demand for fuelwood by introducing alternative fuels and energy efficient stoves.

In comparing the policies of other developing countries in the area, namely India and Bangladesh, a study done by FAO (1987) concluded that policies adopted by Nepal are more community oriented than most other developing countries. The Master Plan for the Forestry Sector provides a vision for the forestry sector in Nepal that is suitable for the socioeconomic and political situation in Nepal. The plan is further solidified by the enactment of the Decentralization Act of 1982. The Act sought to increase local participation in development activities. The power was delegated from the Central government to local administrative units (Bienen et al. 1990). The Decentralization Act provides for the formation of the "user group" or "consumer's committee".

Sociological studies (Gautam 1988, Shrestha 1988, Karmacharya 1988) have shown that the current policy of handing over forest land to the panchayat, although a move in the right

direction, is not effective in providing incentives to the local people to participate. Therefore, the Master Plan for the Forestry Sector adapted new policies which give significant control of the local forests to the usergroups. The locals are encouraged to form user groups and devise their own plan for the management of the forest. The groups are not based on any political unit but rather on the initiative on the part of the villagers interested in managing their immediate natural resources. The only role of the Government is in providing financial and technical assistance. Periodic monitoring and evaluation will be conducted to verify the use of the appropriated funds and determine future needs. This policy is reflected in the most recent World Bank project, Hill Community Forestry Project, which will be discussed in the following chapter.

## 6.0. INTERNATIONAL ASSISTANCE

The international community has been providing much needed financial and technical resources to Nepal to develop its forest resources.<sup>3</sup> The areas of assistance range from industrial forestry operations, research, planning to community forestry activities. Coordination among the donors has been a difficult task in the past. With the development of the Master Plan for the Forestry Sector donor activities are coordinated by the newly established Planning Division, which consists of Foreign Aid Coordination Division (The Master Plan for the Forestry Sector 1988). The willingness of the Government of Nepal to institute a new administrative branch to facilitate better coordination of the project activities shows its commitment to the cause (Bonita and Kanel 1988).

The World Bank involvement in community forestry exceeds any other donor in both total area covered and amount spent. Table V shows ongoing community forestry projects in Nepal, the donors, total cost and date of start-up and completion. The World Bank's experience in Nepal is going to affect a significant proportion of the Nepali rural population due to the magnitude of the projects. Therefore, these projects have been chosen for the case study in this paper.

---

<sup>3</sup> The major supporters are the World Bank (IBRD), Asian Development Bank (ADB), United States Agency for International Development (USAID), Australian Development Assistance Bureau (ADAB), Canadian International Development Agency (CIDA), European Economic Community (EEC), Finnish International Development Agency FINNIDA), Deutsche Gesellschaft Fur Technische Zusammenarbeit (GTZ), Overseas Development Administration-UK (ODA), and Swiss Agency for Technical Assistance (SATA).

TABLE V. RECENTLY COMPLETED AND ONGOING COMMUNITY FORESTRY PROJECTS IN NEPAL

Project	Donor	Districts Covered	Amount	Start-up	Completion
Hill Community Forestry Project	IDA	37 hill districts	\$30.55 mil	1990	1998
Community Forestry Devel. & Training Project	IDA/ UNDP	29 hill districts	\$17 million	1980	1989
Second Forestry Project	IDA/ EEC	14 terai districts	\$18 million	1983	1990
Hill Forestry Dev. Project	ADB/ FINNIDA	3 districts	\$19.1 mil	1987	1993
Rasuwa Nuwakot Integrated Rural Dev. Project	IDA	2 districts	\$19.2 mil	1984	1990
Rapti Area Dev. Program II	USAID	5 districts	\$18.8 mil	1987	1995
Nepal-Australia Forestry Project	ADAB	2 districts	A\$7.4 mil	1986	1990
Karnali-Bheri Integrated Rural Dev. Project	CIDA	3 districts	NR 245.8 million	1985	1990
Kosi Hill Area Rural Dev. Project	ODA	4 districts	NR 67 mil	1986	1991
Tnau Watershed Project	SATA/ GTZ	1 districts	SF 45 mil	1978	1993
Integrated Hill Development Project	SATA	1 districts	NR 45 mil	1975	1990
Sagarmatha Integrated Rural Dev. Project	ADB/ IFAD	3 districts	NR 4.5mil	1979	1988
Resource Conservation and Utilization Project	USAID	3 districts		1981	1988

Source: Joshi, A.L. 1990. *Literature Review on : Resource Management in Community Forestry*. Center for Economic Development and Administration, Kathmandu, Nepal.

## 6.1. A Case Study Of The World Bank Projects

Before 1978 the World Bank supported on the average only one forestry project per year and the projects were mainly focused in the area of industrial forestry. Industrial forestry projects sought to provide technical and financial assistance to the forest industries in establishing plantations, logging activities, and saw mills. People who benefitted from these projects were the local elite and the poor were left to fend for themselves (Cernea 1991).

Since then the Bank has invested in sociological studies and research. As the importance of social structures in forest management came to light, their policies towards forestry sector changed. After the publication the Forestry Sector policy paper of 1978, funding for forestry projects increased dramatically (from \$20 million per year in 1970 to \$130 million in early 1980's). The funds over the period of 1977 through 1989 were allocated as shown in Table VI. It also shows that in recent years the World Bank's emphasis has shifted towards social forestry projects from industrial forestry (Guggenheim and Spears 1991). In spite of this new policy most of the effort have been concentrated on institutional support to governments rather than the small communities. Recent efforts, however, are directed more towards small farmers. Studies show that economic rates of return for these social forestry projects are as high or higher than industrial plantation projects (Guggenheim and Spears 1991).

Table VI. World Bank Forestry Lending, 1977-1989

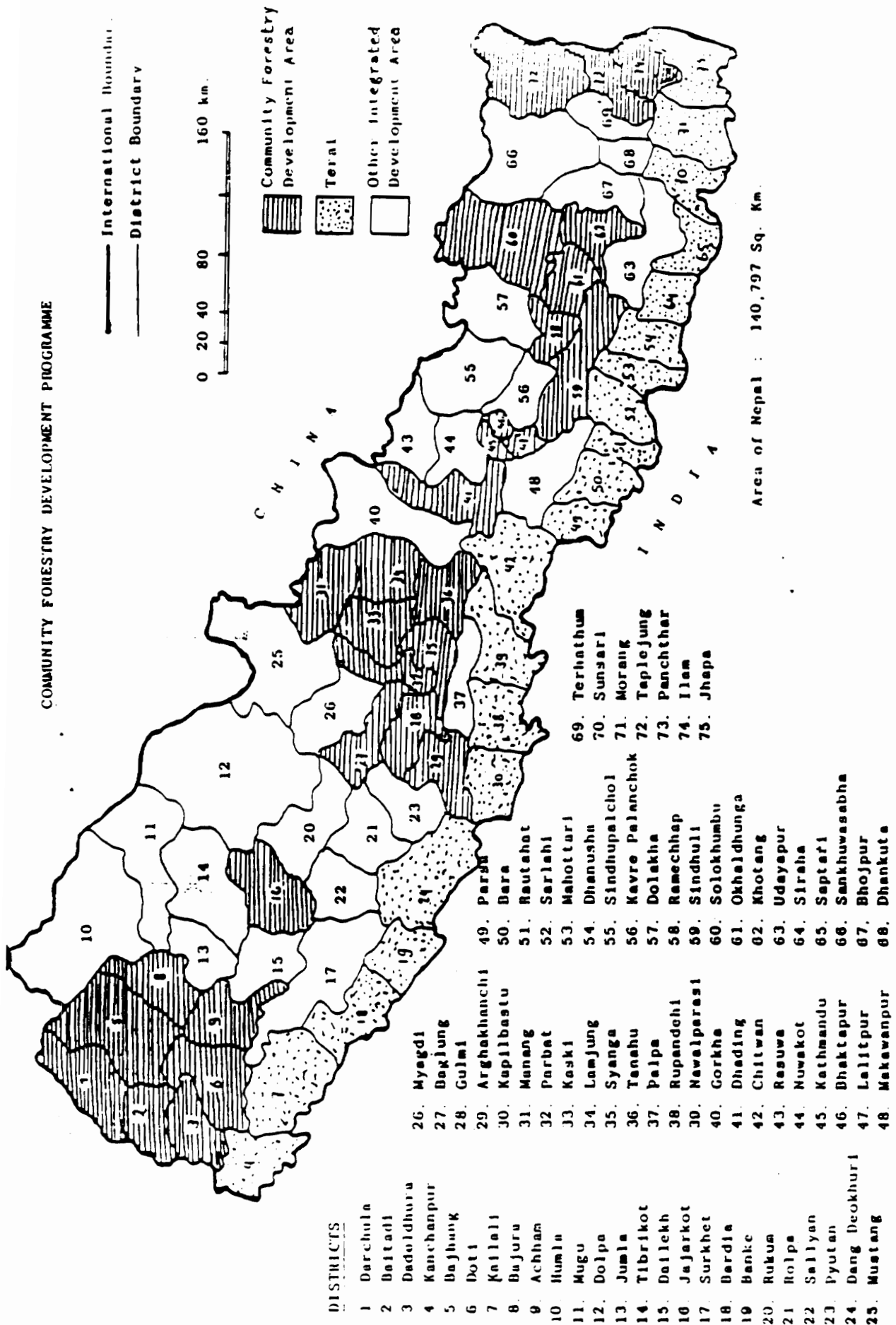
Type of project	Number of Projects	Total Loan/credit allocation (millions of dollars)	Percentage of Total Lending
Social Forestry	62	2,643.0	29.9
Watershed Rehabilitation	15	929.5	10.5
Forestry Components of Agriculture and Rural Development Projects	72	4,488.1	50.8
Forest Management and Industrial Plantations	30	606.8	6.9
Sawmills/Plywood mills	8	172.8	2.0
Total	187	8,840.2	100.0

Source: Guggenheim, S. and John Spears. "Sociological and Environmental Dimensions of Social Forestry Projects" ed. M. M. Cernea, Putting People First: Sociological Variables in Rural Development. Second Edition. A World Bank Publication, 1991.

The World Bank's involvement with Nepal's forestry sector began in 1980 with a 17 million dollar Community Forestry Development and Training Project (Table VII). This ten year project aimed to develop community forestry in the hills and develop institutional capabilities of Nepal to train qualified forestry and soil and water conservation personnel. The project covered the 29 districts that were not under any other rural development projects operating at the time and covered about one-third of the total land area (MAP II)(Arnold and Campbell 1985).

The project provided village panchayats funds for nurseries to establish 16,5261 ha of Panchayat Forest, rehabilitate 119,850 ha of Panchayat Protected Forest, and about 0.9 million trees were distributed for private lands and installed 16,000 fuel-efficient cooking stoves. The training component of the project established a new campus to the Institute of Forestry and upgraded the existing training unit in the Ministry of Forestry. The project also helped establish a Community Forestry and Afforestation Division (CFAD) in the Forest Division of the Ministry of Forests (Arnold and Campbell 1985).

COMMUNITY FORESTRY DEVELOPMENT PROGRAMME



MAP II. Area covered under the Community Forestry Development and Training Project/The World Bank. (Arnold and Campbell 1985)

Table VII. The World Bank Supported Forestry Projects in Nepal

PROJECT	COVERAGE	COST (US\$ millions)	PERIOD
Community Forestry Develop. and Training Project	29 Hill Districts	17	1980-89
Second Forestry Project	14 Terai Districts	18	1983-90
Rasuwa Nuwakot Integrated Rural Development Project	Rasuwa & Nuwakot Dis.	19.1	1987-93
Hill Community Forestry Project	37 Hill Districts	30.55	1990-98

Source: Joshi, A.L. 1990. Literature Review on : Resource Management in Community Forestry. Center for Economic Development and Administration, Kathmandu, Nepal.

The second World Bank Project that supported community forestry was the Second Forestry Project. This 18 million dollar project started in 1983 and covers 14 districts in the terai. The objective of the project is to establish State, private, community, and agro forestry plantations. Unclear policy regarding Panchayat and Panchayat Protected Forest and Forestry Department's reluctance to support local user groups led to problems implementing the project. The problems have been resolved and project was expected to be completed as scheduled (Master Plan for the Forestry Sector 1988).

The World Bank assisted Rasuwa-Nuwakot Rural Development Project consists of a community forestry development component. This is a phase two of an earlier rural development project in the same area launched in 1979. This project was the first one in the middle hills. Phase one of the project faced numerous constraints after the government changed the implementing agency to Ministry of Panchayat and Local Development and the prevailing political unrest caused further delays. Phase two was designed before the institutional and organizational constraints came into light and therefore, were not taken into account (APROSC 1983).

The most recent effort made by the World Bank to help the government of Nepal in its attempt to retard the environmental deterioration of the hills is the Hill Community Forestry Project. As emphasized in the Master Plan for the Forestry Sector, the project's objective is to promote active participation towards the development of community forestry. The only involvement from the government would come in the form of extension agents whose responsibility is to help identify, organize, and register user groups. The communal

forest which have been under state ownership since 1957 will be transferred to the user groups for their management and protection. The User Groups will have total control over the management of their respective forests and the Forestry Department will provide technical assistance (His Majesty's Government of Nepal 1990a).

## **6.2. Lessons Learned from Community Forestry Development and Training Project**

Forestry projects take relatively longer to complete a project cycle as compared to other development projects. Forestry projects are vulnerable drought, flooding, and landslides. In order to assess the effects of a forestry project it could take at least ten to fifteen years depending on climate and the growth rate of the chosen tree species.

Of the above four projects only one, the Community Forestry Development and Training Project, has been completed and it is now under evaluation. An earlier evaluation effort suggested that the project had exceeded its physical goals. The panchayats involved in the project at completion were double the targeted number. Similarly, the number of nurseries, plantations (Panchayat and Panchayat Protected Forests), private plantings, and number of fuel efficient cook stoves distributed exceeded the targets (Karmacharya 1988).

However, the physical achievement was overshadowed by the constraints faced during implementation. Livestock grazing continued in the plantations causing damage to the seedlings and decreasing survival. Low survival was also caused by distribution of saplings

unsuitable for local environment. Pines were given preference because they are easy to multiply; while local people preferred fodder, firewood, and fruit tree species (Campbell and Bhattarai 1983).

The project suffered a major setback in terms of management problems. The process of handing over the forests to the Panchayats did not provide adequate instructions to the local people about their rights to the forests and the products. Since the forests were handed over to the panchayats and not to the local community the project activities were not maintained after completion. A Panchayat could include more than one local community, and did not possess the administrative and financial resources to maintain such activities (Karmacharya 1988, Arnold and Campbell 1985).

Introduction of fuel efficient wood stoves was also one of the major component of the project. The stoves were produced, distributed and installed by project staff. However, the stoves were not as widely accepted as expected and about 40% of the stoves were abandoned the first year of distribution. The main problems associated with the stoves were high breakage rate and unsuitability for local cooking (Joseph et al. 1984).

Training and extension was another important component of the project. A new campus of the Tribuvan University was constructed in Pokhara and improvements were made to the existing Institute of Forestry facilities in Hetaunda. The lack of experience on the part of the project staff in extension work posed a major constraint on the implementation of the project. Training component of the Community Forestry Training

and Development project was focused on degree programs and institutional building and did not have any provisions for extension and outreach training. The follow-up project has taken this into account and the experience gained over the past ten years is also going to be useful (Malla 1988).

A mid term review of the project was conducted in 1983. The review concluded that the community forestry approach was suitable for the area but more research was needed in the qualitative aspects of the plantation operations. It also recommended flexibility to respond to local needs and more emphasis should be given to local participation. However, none of these recommendations were taken into account in the post review period. The purpose of monitoring and evaluation is not just to bring into light the failures of the project but also to take these into account and formulate ways of overcoming the shortcomings. The latter part of the purpose of monitoring and evaluation was lost in this project. Therefore, it had no major impact on the overall performance of the project (Arnold and Campbell 1985).

The above factors, however, were taken into account in the design of the follow-up project, Hill community forestry project. This project proposes to establish 4,000 user groups, which would implement the project. This mechanism provides flexibility to the user groups to adopt traditional management systems unique to a certain region. In order to prevent undue delays, financial assistance will provide directly to registered user groups. By limiting the role of the local government it is believed that the project will gain trust of the people. If the people believe that the forests are going to remain under their own control, they will have significant incentive to cooperate and participate in the project

(Karmacharya 1988)

The Community Forestry Development and Training Project also had positive effect on the forestry sector in Nepal. It not only achieved most of its physical objectives but it also increased awareness of deforestation and conservation issues among rural people and professionals and will influence how future community forestry projects are designed and implemented.

The project also initiated the establishment of the Monitoring and Evaluation Division within the Community Forestry and Afforestation Department, so that the ongoing projects are constantly monitored by the Government as well as the project personnel. This process will not only provide baseline data for future projects but will also give an insight into what works and what does not (Wormald and Messerschmidt 1986).

This project touched on most of the criteria outlined in Chapter 2 for evaluating community forestry project, but did not implement any to their maximum capacity. An earlier assessment (Arnold and Campbell 1985) had revealed a number of factors of considerable importance towards the design and implementation of the project. Most of these factors, however, were not taken into account. For example, the survey found that fodder supply was dwindling in most part of the hills but fodder species were not given as much importance as pines. Pines are fast growing species and the project seemed to be more interested in immediate visible effect than long term effect. The sociological studies conducted were not adequate and did not reveal important sociological factors that could

have had an impact on the project. For example, later surveys found that trees planted on private lands are still a major source of fuel wood and fodder but private plantations were not emphasized in the project areas.

As mentioned earlier, labor availability for extension was over estimated and this had an immediate effect on local participation due to the inability to inspire wide spread participation. More emphasis was placed on panchayat committees than the existing local management systems and did not acknowledge the prevailing formal and informal land tenure systems. In spite the "grassroots" nature of the problem the process of implementation was "top-down". For example, the complicated guidelines for the preparations for the management plans for the forests overwhelmed the people. The Department of Forests did not have the man power to assist every panchayat with the preparation of the plans and therefore, was not progressing as expected (Karmacharya 1988).

The project also lacked the flexibility in spite of its being the first project of such kind. It did not provide for the knowledge that was being gained as the project got under way to be incorporated into the activities in the future. For examples, the preparation of management plans required the local committees to comduct inventories of the area even in areas with no standing tree (Arnold and Campbell 1985).

The importance of policy and legal reforms in the success of any forestry project is great. Policies addressing broad issues such as population control, land tenure, political and

institutional, and social reforms are fundamental to the long term sustainability of all development projects. Forestry in Nepal is closely related to subsistence agriculture and new policies need to be formulated according to the need. A World Bank study (1991), however, concluded that more than inappropriate policies the main constraint to agricultural productivity has been ineffective irrigation delivery, lack of fertilizer, and slow progress in yield increasing technologies together with massive soil erosion.

## **7.0. CONDITIONS FOR SUSTAINABILITY OF PROJECTS**

Sustainability of a community forestry project for the purpose of this paper is defined as the ability of a project to financially, technically, and administratively maintain project activities without further degrading the state of the natural resource. Sustainability of forestry project requires a unique balance of all the physical, financial, natural, human, institutional, and cultural factors involved in the project.

Since the World Bank projects in Nepal are ongoing or in the early stage of completion, their long term status is unpredictable. However, a review of the available literature on the subject provided a few conditions that are common to all successful projects ( Gregersen et al. 1989, Karmacharya 1988, Gugenheim and Spears 1991, The World Bank 1991b). Although there is no one right model for a successful community forestry project, these conditions provide a criteria for predicting the success of future projects.

### **7.1. Incentives for Wide Public Participation**

The most important aspect of community forestry is that local people participate in the management of their resources. Local people should be involved early in the project and not as an afterthought. Project planners should not assume that local people lack knowledge, but should utilize indigenous knowledge. They can provide valuable insight to the community structure and the way they perceive problems (Cernea 1991). For example, finding out what species of trees (fuelwood, fodder, or timber) the local people prefer can

save time and money later in the project. It should be remembered that the project is for the local people and by the local people, and if the idea does not appeal to them, the project is a failure before it even begins.

Demonstration is important to convince people that a project is going to benefit them. People find it hard to adopt new ideas or technologies and discard their age old tradition. Especially in countries like Nepal where people are very superstitious, they are reluctant to try anything new for fear of bad omen. Simple technologies that are easy to copy and adopt have been more successful than state-of-the-art technologies imported from western world. Technologies based on local resources will also provide employment opportunities in other sectors. For example, the fuel efficient stoves distributed in the Community Forestry Development and Training Project, were made from concrete which was not easily available in remote villages. New ways of making stoves from local resources such as clay would have provided employment opportunities for the local people in manufacturing and maintaining stoves.

Tree farming is a relatively slow process and incentives can provide the motivation for people to get involved (Shrestha 1984). Priorities differ among different communities and sociological studies can be helpful in identifying the needs of a particular community. For example, in Panchayat Forests if the income from sale of forest products was put back into the community, it would provide an incentive to the local people not to destroy the forest for personal gain. This approach has been implemented in another project, the Annapurna Conservation Area Project funded by World Wildlife Fund, and there has been tremendous

local support for the project (Hough and Sherpa 1989).

Subsidies are necessary of the initial stages of most community forestry projects. Subsidies can be in the forms of public lands, improved seeds, seedlings, fertilizers and tools. However, to generate a sense of responsibility among local people, subsidies should be used with care. Some investment by the local people is needed to generate responsibility and interest in the project (Gregerson et al. 1989).

Social forestry often tends to exclude the landless. As explained earlier in the text, land tenure is an important factor in generating interest among people. Secure land tenure provides stability and willingness to make improvements to the land (Molnar 1991). Landownership should be based on existing practices. Existing informal user rights should not be violated in the land transfer.

## **7.2. Clarify property rights regarding the use of resources**

In the case of the Community Forestry Development and Training Project, local community rights to the Panchayat and Panchayat Protected forests were not clearly defined and this made the villagers reluctant to participate. The government had nationalized forests once so as far as the villagers were concerned it could happen again and they refrained from investing time and labor in something that might be taken away without notice. It is essential that every group in the community benefit from the project to promote mutual cooperation. Extension agents can play a fundamental role in providing accurate

information to the public.

Studies have shown the existence of natural forests in many parts of Nepal that are being managed by the local people (Joshi 1990; Fisher 1989; Fisher et al. 1990; and Gilmour 1989). Such existing forest management practices need to be encouraged and propagated. There are also existing forests which have been designated national parks in many parts of the country. People living around the park have been in constant conflict with the park rangers. When demarcating national park boundaries, it has to be considered that the people in the area have been dependent on the forest resources from the park for their daily fuel and fodder requirements. A buffer zone or an area where some grazing and fuelwood collecting activities are allowed, should be designated to sustain the ongoing activities (Wells et al. 1990).

Rural women in developing countries play an important role in the forest sector. Women's involvement is not limited to fuelwood and fodder collection but extends to management. There are examples of active roles taken by women in forest resource management including the Chipko Movement in northern India. The Chipko movement was started by women who were concerned about excessive logging (Molnar and Schreiber 1989). The active participation of women in social forestry projects is necessary for the success of the project.

It often takes a number of years to reap the benefits of a forestry project. In order to keep up the morale of the people some activities to generate short term benefits

must be implemented. These activities should be income generating, for example collection and sale of mushrooms, bark, honey, wax, fruits, or fodder (Gregerson et al. 1989).

Providing alternative sources of energy and fodder can relieve some of the pressure from of the forest. Alternative energy can be kerosene, biogas, or hydroelectricity. In Nepal, there is a great potential for hydroelectric power due to the sudden drop in altitude from 29,000 feet to 600 feet above sea level. Nepal, however, has not been able to exploit this invaluable resource to its potential.

### **7.3 Transfer of Management Responsibilities to the Local People.**

Ultimately, the responsibility of managing local resources lies with the local people. The problem with most of the community forests in Nepal has been that the Panchayats have designated forest watchers who are paid by the project to watch over the forests. When the project is terminated the forests are exploited in the absence of the guards. The project then is not teaching the local people to be responsible. Gradual handover of the management of the forests, including the financial aspects, is crucial for long term viability of any project (Karmacharya and Fisher 1988).

Some authors (Wallace 1988, Hopley 1987) content that the perception of responsibility for the forests is more important than the legal ownership of the forest. The forests, however, forests handed over to communities so far have been in degraded state. Most of the remaining forests are still under the management of the Ministry of Forest and

Environment (formerly the Ministry of Forests and Soil Conservation). District and local forest officials have been reluctant in the past to hand over forested land to the communities.

It is essential that there is enough forest or potential forest land available in the community to fulfill local needs for the products. If there is surplus product available the communities should have the right to sell these to other communities. Currently any such system to facilitate the sale or transport of community forest products is lacking. Asking the local people to pick up the cost for managing the forests including paying the forest guards is probably the most difficult task. If they can sell surplus the money raised from the sale can be used for the maintenance of the fences, paying the guards, and buying seedlings.

Unnecessary emphasis has been placed on the organization of forest management groups when they already exist. (Fisher 1989). It is necessary to recognize indigenous management systems and if the systems are effective they should be left alone. In the future, government's role should be restricted to providing technical and financial assistance whenever needed. Extension activities will be needed to prepare forest management plans as required by the Master Plan for the Forestry Sector. This has been the main factor that has delayed the handing over process. Due to lack of experience in extension the agents have not been successful in motivating and assisting the people to prepare management plans.

Most important is the representation of the community in the committee formed to

manage the forest. The major factor contributing to the failure of Panchayat and Panchayat Protected forests was that the panchayat as a political unit did not adequately represent the users. Therefore, proper identification of the user groups should be the first step in transfer of management of forests to the communities.

The above conditions are broad conditions formulated from an evaluation of past experience, which does not necessarily mean they will apply to every village in Nepal. Every village has different socio-economic conditions and, therefore, needs to have different sets of conditions formulated for its purpose. Conditions vary widely within countries and the importance of indepth socio-economic analysis can not be emphasized enough.

## 8.0. CONCLUSION AND RECOMMENDATIONS

Community forestry is being seen as one remedy to the deforestation problems in developing countries. Development agencies are also emphasizing community forestry in their programs. Some countries, including Nepal, have formulated policies to facilitate community forestry activities. Although the current projects are not producing remarkable results there is much to be learned from these projects. There is, however, lack of coordination and cooperation among donors that prevents the lessons learned from one project to be reflected upon future projects funded by a different donor.

In Nepal, community forestry projects in the upcoming decade should concentrate on three things. First, a thorough sociological research should be conducted so that the project design can be responsive to the local needs. Second, major efforts should be made involve local people in projects through incentives and education. Finally, management responsibilities should be transferred to the local people within the life of the period so that when the project is terminated they will have assumed full responsibility.

These three aspects coupled with favorable policy environment should be the strategy for battling deforestation in Nepal. However, there should also be a movement away from project type activities. Project-type activities provide too little too late. Multilateral and bilateral assistance should focus on providing a vision for the development of country. Nepal Master Plan for the Forestry Sector is a step in that direction. It outlines objectives for all sectors related to forestry in Nepal and foreign assistance is tailored to achieve them.

## 9.0. REFERENCES

- Agricultural Projects Services Centre. 1983. *Rasuwa Nuwakot Rural Development Project*, Secon Phase Project Preparation, Final Report, Vol I, Main Text, Kathmandu.
- Archbugi, F. and P. Nijkamp, and F.J. Soetsman. 1989. "The Challenge of Sustainable Development", Archibugi, F. and F.J. Soetsman, *Economy and Ecology: Towards Sustainable Development*, The Netherlands:Kluwer Publishers.
- Arnold, J.E.M. and J. Gabriel Campbell. 1985. *Collective Management of Hill Forests in Nepal: The Community Forestry Development Project*. Paper prepared for the Common Property Resource Management Conference:Annapolis, April 21-27, 1985.
- Bajracharya, D. 1983. "Deforestation in the Food/Fuel Context Historical and Political Perspectives from Nepal", *Mountain Research and Development*, Vol. 3, No. 3, pp227-240.
- Berkes, F. and M. T. Farvar. 1990. "Introduction and Overview" in Berkes, F. (Ed.), 1989. *Common Property Resources: Ecology and Community Based Sustainable Development*. London:Belhaven.
- Bienen, H., D. Kapur, J. Parks, and J. Riedinger. 1990. "Decentralization in Nepal", *World Development*, vol 18, January, p 61-75.
- Blaikie, P., J. Cameron, and D. Seddon. 1980. *Nepal in Crisis: Growth and Stagnation in at the Periphery*. New Dehli:Oxford University Press.
- Bonita, M. and K. Kanel. 1988. "Some Views of the Master Plan for Forestry Sector Project on Community Forestry", *Banko Jankari* vol. 1, no. 4, Special Issue.
- Bromley, D.W. and M. M. Cernea. 1989. *The Management of Common Property Natural Resources: Some Conceptual Fallacies*. World Bank Discussion Papers No. 57.
- Browning, A.J. 1974. *Forest Development, Nepal: Marketing Prepared for the government of Nepal*, FAO:DP/NEP/69/513 Technical Report No 1 FAO Rome.
- Bouldings, Kenneth. 1966. "The Economics of the Coming Spaceship Earth." in H.E.Jarrett, ed., *Environmental Quality in the Growing Economy*, Baltimore:John Hopkins Press.
- Campbell, J.G. and T. N. Bhattarai. 1983. *Plantation Survival, Private Planting, Improved Stove Use, and Knowledge Increase in Community Forestry*, HMG/UNDP/FAO Community Forestry Development Project:Nepal.
- Campbell, J.G. and R.P. Shrestha, and F. Euphrat. 1987. "Socio-economic Factors in Traditional Forest Use and Management: Preliminary Results from a Study of Community Forest Management in Nepal." *Banko Jankari* 1(4):45-54.

Cernea, M.M. 1991. *The Social Actors of Participatory Afforestation Strategies*. ed. M. M. Cernea, *Putting People First: Sociological Variables in Rural Development*. Second Edition. The World Bank.

Cernea, M.M. 1989. *User Groups as Producers in Participatory Afforestation Strategies*. World Bank Discussion Papers. The World Bank, Washington D.C.

Chapagain, D.P. 1984. *Managing Public Lands as a Common Property Resource*. A Village Case Study in Nepal. PhD Dissertation, University of Wisconsin-Madison.

Ciriacy-Wantrup, S. V. and Richard Bishop. 1978. "Common Property as a Concept in Natural Resource Policy", *Natural Resource Journal*, 15, pp713-27.

Colby, M.E. 1990. *Environmental Management in Development: the Evolution of Paradigms*, World Bank Discussion Papers No. 80.

Dani, A. and J.G. Campbell. 1986. *Sustaining Upland Resources: People's participation in Watershed Management*, ICIMOD Occasional Paper No. 3, Kathmandu.

Eckholm, E. P. 1976. *Losing Ground*. New York:W. Norton.

Environmental Resources Ltd. 1989. *Natural Resource Management for Sustainable Development*, London:ERL.

Food and Agricultural Organization (FAO). 1987. *Tree Growing by Rural People*. Rome:FAO Forestry Paper 64.

Fisher, R.J. 1989. *Indigenous Systems of Common Property Forest Management in Nepal*, Working Paper No. 18, Environment and Policy Institute, East-West Center, Hawaii.

Fisher, R.J., H. B. Singh, D.R. Pandey, and H. Lang. 1990. *The Management of Forest Resources in Sindhu Palchok and Kabhre Palanchol Districts of Nepal*, Mountain Population and Employment, Discussion Paper Series No.8, International Centre for Integrated Mountain Development, Kathmandu, Nepal.

Fortmann, L. and J.W. Bruce. 1988. *Whose Trees? Proprietary Dimensions of Forestry*. Boulder and London:Westview Press.

Fox, J. and R.J. Fisher. 1990. *Community Organizations and Government Bureaucracies in Social Forestry*, Working Paper No. 22, East-West Center, Honolulu, Hawaii.

Gaige, Frederick. 1975. *Regionalism and National Unity in Nepal*, Berkeley, California: University of California Press.

Gautam, K. H. 1988. "Legal Authority of Forest User Groups", *Banko Jankari* vol. 1, no. 4,

pp 1-4. Special Issue.

Gilmour, D.A. 1989. *Forest Resources and Indigenous Management in Nepal*, Working Paper No. 17, East-West Center, Honolulu.

Gresersen, H., Sydney Draper, and Dieter Elz. (ed.) 1989. *People and Trees : The Role of Social Forestry in Sustainable Development*. Economic Development Institute of The World Bank . EDI Seminar Series.

Guggenheim, S. and John Spears. 1991. "Sociological and Environmental Dimensions of Social Forestry Projects" ed. M. M. Cernea, *Putting People First: Sociological Variables in Rural Development*. Second Edition. The World Bank.

Hardin, Garret. 1968. "The Tragedy of the Commons", *Science*, 162:12143-1248.

His Majesty's Government of Nepal. 1990. *Population and Development*, Population Commission, Singha Durbar, Kathmandu, Nepal.

His Majesty's Government of Nepal. 1990a. *Implementation Schedule of the Master Plan for the Forestry Sector in Nepal, 1990-1995*, Ministry of Forests and Soil Conservation, Kathmandu, Nepal.

Hobley, Mary. 1987. *Involving the Silent Majority in Forest Management: Can it be Done?* Overseas Development Institute (ODI): The Social Forestry Network Paper.

Hough, J.H. and Mingma N. Sherpa. 1989. "Bottoms Up vs. Basic Needs: Integrating Conservation and Development in the Annapurna and Michiru Mountain Conservation Areas of Nepal and Malawi. *Ambio*, Vol. No. 8, pp435-441.

Joseph, S. , K.L. Shrestha, E. Peliinck, J.G. Campbell, and T. N. Bhattarai. 1984. *Introduction of Improved Stoves for Domestic Cooking in Nepal*. HMG/UNDP/FAO/IDA Community Forestry Development Project, Nepal.

Joshi, A. L. 1990. *Literature Review on : Resource Management in Community Forestry*. Center for Economic Development and Administration, Kathmandu, Nepal.

Karmacharya, S. 1988. " Community Forest Management: Experiences of the Community Forestry Development Project", *Banko Jankari* vol. 1, no. 4, Special Issue.

Kirkpatrick, Colonel. 1811. *An Account of the Kingdom of Nepal*, William Miller, London: Reprint Asian Publication Services.

Malla, Y. B. 1988. " Community Forestry Extension in Nepal", *Banko Jankari* vol. 1, no. 4, Special Issue.

*Master Plan for the Forestry Sector*. 1988. His Majesty's Government of Nepal, Ministry of Forests and Soil Conservation, Kathmandu, Nepal.

Mishra, H.R. 1985. "The Fragile Mountain Revisited: Nepal's Agenda for Halting the Slide", in *People and Protected Areas in the Hindu-Kush Himalaya Proceedings of the International Workshop on the Management of National Parks and Protected Areas in the Hindu Kush Himalaya*, Kathmandu, Nepal.

Molnar, Augusta. 1991. "Policy Review: Women and International Forestry Development", *Society and Natural Resources*, Vol 4, pp81-90, 1991.

. 1990. "Land Tenure Issues in Watershed Development" in *Watershed Development in Asia: Strategies and Technologies*, ed. J.B. Doolette and W. B. Magrath. World Bank Technical Paper Number 127, 1990.

. 1981. *Nepal-The Dynamics of Traditional Forest Management: Implications for the Community Forestry Development and Training Project*. Unpublished Report to the World Bank.

Molnar, A. and Gotz Schreiber. 1989. *Women and Forestry: Operational Issues*, Working Paper, Women in Development, The World Bank.

Myrdal, G. and S.S. King. 1971. *Asian Drama: An Enquiry into the Poverty of Nations*, London: Penguin Press.

National Planning Commission. 1975. *The Fifth Five Year Plan*, Kathmandu, Nepal.

Ostrom, E. 1986. "Issues of Definition and Theory: Some Conclusion and Hypothesis", in *Proceedings of the Conference on Common Property Resource Management*, Washington D.C.: National Academy Press, pp597-615.

Pant, Y.P. and S.C. Jain. 1972. *Long Term Planning for Agriculture in Nepal*. New Dehli: Vikas Publications.

Population Reference Bureau, Inc. 1991. *World Population Data Sheet: Demographic data and estimates for the countries and regions of the world*, Washington, D.C.

Postel, S. and J.C. Ryan. 1991. "Reforming Forestry" in *State of the World* ed. Lester R. Brown, New York: Worldwatch Institute.

Rana, R. 1982. *Essays in the Practice of Government in Nepal*, New Dehli: Manohar Publications.

Rana R. and Y.S. Thapa. 1975. "Population Migration: Nature and Scope", in Upadyaya and Abueva (eds.), *Population and Development in Nepal*. Centre for Economic Development

and Administration, Kathmandu, Nepal

Redclift, Michael. 1987. *Sustainable Development: Exploring the Contradictions*. London and New York: Methuen.

Regmi, M.C. 1978. "Requirements for Energy in the Rural Areas of Developing Countries. In Brown, N.L. (ed.) *Renewable Energy Resources and Rural Applications in the Development World* AAAS Symposium No 6. Westview Press, Boulder, CO.

Schmidt, A. 1971. *The Concept of Nature in Marx*, London: New Left Books.

Seddon, David. 1987. *Nepal: A State of Poverty*, New Delhi: Vikas Publishing.

Shrestha, B. K. 1988. "The Impact of Decentralization on Community Forest Management in Nepal", *Banko Jankari* vol. 1, no. 4, pp 9-11, Special Issue.

Shrestha, R.J. 1984. "Incentives and Distribution of Benefits in Community Forestry: A Case Study from Nepal", *Community Forestry: lessons from Case Studies in Asia and the Pacific Region* ed. Y.S. Rao, M. Hoskins, N.T. Vergara and C.P. Castro, Thailand.

Stohr, W. B., D. Taylor, and R. Fraser, ed. 1981. *Development from Above or Below? The Dialectics of Regional Planning in Developing Countries*. John Wiley and Sons.

Wallace, M.B. 1988. *Forest Degradation in Nepal: Institutional Context and Policy Alternatives*. HMG/USAID/GTZ Project, Research Report Series.

Wells, Michael, Katrina Brandon, and Lee Hannah. 1990. *People and Parks: Linking Protected Area Management with Local Communities*, Draft. The World Bank.

The World Bank. 1991a. *Nepal: Poverty and Income*. A World Bank Country Study, Washington D.C.

The World Bank. 1991b. *The World Bank Policy Paper: The Forestry Sector*. The World Bank, Washington, D.C.

Wormald, T.J. 1986. *Management and Monitoring of Community Forestry Activities in Nepal*, HMG/UNDP/FAO Community Forestry Development Project, A Consultant Report, Kathmandu.

World Commission on Environment and Development. 1987. *Our Common Future*. Oxford & New York: Oxford University Press.