

HIS MAJESTY'S GOVERNMENT
OF
NEPAL

FORESTRY SECTOR POLICY
2000

MINISTRY OF FORESTS AND SOIL CONSERVATION
KATHMANDU

FORESTRY SECTOR POLICY 2000

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Foreword

The Ministry of Forests and Soil Conservation requires a clear-cut policy of its own if it is to implement forestry sector programmes efficiently and effectively. This Forestry Sector Policy and its programmes together determine the institutional arrangement and the legislative package for the sector.

Although Nepal has a long tradition of formulating policies, it has never instituted a system of periodically amending or updating these policies. The present officials in the ministry are entrusted with the task of making the policy of the Ministry of Forests and Soil Conservation compatible with the responsibilities of the ministry. Consequently, after assuming office, I felt the need for reviewing and updating the existing policy to make it more relevant and up-to-date.

The Forestry Sector Policy, 2000, is an updated version of the Forestry Master Plan Policy and subsequent amendments to that document. It should inspire the revision of the documents of the Master Plan for the Forestry Sector as well. The policy of 2000 contains development imperatives, outlines, strategies, and programmes, and summarises the investment required to develop the forestry sector. The policy will be instrumental in helping the government to prepare plans and programmes, to formulate legislation and to develop a mechanism that fosters co-operation with donor agencies. In sum, issuance of this policy will ensure that the forestry sector plays a vital role in the overall progress and well-being of Nepal and her people.

The following Forestry Sector Policy, 2000, reflects the noble wishes of His Majesty's Government and, in my view, is a valuable asset of the Ministry of Forest and Soil Conservation.

I would like to thank all the professionals involved for their valuable inputs in preparing this document.

September 2000.

Prime Minister

Forestry Sector Policy, 2000

1. Heavy Pressure on Forests

The increasing population is exerting heavy pressure on the forests of Nepal. The people depend on forests for firewood as well as for timber, medicinal plants and other forestry products. They also use forests to graze livestock and to collect fodder, to feed the large number of livestock raised to supply the manure essential for agricultural crops. As a result of this pressure, the area of forests has been reduced and the number of trees depleted. Thus, it has become increasingly difficult for the people to meet their basic need for forestry products. Pressure on the remaining healthy forests has consequently intensified, thus creating a vicious cycle and aggravating the already serious problems of environmental degradation and declining agricultural productivity.

Table 1 Projected Supply and Demand of Forest Products without the Master Plan¹

		2000-01	2010-11
Fuel wood (millions of tones)	Supply	12.1	15.5
	Demand	15.2	16.9
	Balance	-3.1	-1.4
Timber (millions of cubic meters)	Supply	1.4	2.2
	Demand	2.5	3.3
	Balance	-1.1	-1.1
Fodder (millions of tonnes)	Supply	7.4	8.3
	Demand	7.2	8.5
	Balance	+0.2	-0.2
Forest area which will be degraded to meet the demand (thousand of hectares)		741.3	1464.6

Table 1 shows that the forestry programs planned previously, if carried out successfully, will increase the supply of forestry products, but that the demand will grow even faster because of the increasing population. The end result, therefore, is not encouraging. The fuelwood balance begins to improve gradually only towards the end of the planning period.

In practice, if nothing more is done to increase supply, the demand will be met by over cutting the forests. In some areas, the result will be the disappearance of forests. In relation to each of the three main forestry products, the most deficit areas are as follows:

¹ Source: Master Plan for the Forestry Sector, 1989

Fuelwood:

All of the Terai
Mid-western and eastern Siwaliks
Western and eastern Middle Mountains

Timber:

All of the Terai
All of the Siwaliks
All of the Middle Mountains
Western High Himal

Fodder:

Central, Far-western, and Mid-western Terai
Central and Mid-western Siwaliks
All of the Middle Mountains, except the eastern region

Except in the Terai, deficits cannot generally be met by transporting these products from neighbouring areas of excess supply because of the lack of roads and the undulating topography. The demand for processed wood products and other forestry products will continue to increase as higher living standards are attained and as the population continues to grow.

2. Analysis of Policies and Legislation

2.1 Previous Policies

2.1.1 Seventh Five-Year Plan (1985-1990)

In the Seventh Plan, the National Planning Commission adopted the policies of the National Forestry Plan, 1976, and developed them further. Those policy objectives were to meet the people's needs for forestry products, including timber, fuelwood, and fodder to maintain or restore the ecological balance through reforestation and watershed management programs, and to derive maximum economic gains from forestry products, by promoting the export of medicinal herbs. The main policies of the Seventh Five-Year Plan were to supply the needs of daily life, including fuelwood, timber, fodder and grass, to carry out afforestation on a large scale, and to protect afforested areas, all by encouraging maximum participation in afforestation programs by the people.

As regards the conservation and promotion of natural resources, the Seventh Five-Year Plan ensured maximum people's participation in activities related to soil and water conservation by giving priority to protecting of the water sources of villages and to the watersheds serving heavily populated areas of the hills. Although the intentions of the plan were noble, the policy declarations were ineffective because of in the absence of strong implementing institutions. As a consequence, so-called Forest Consolidation Committees were formed on an *ad-hoc* basis; these unfortunately resulted in even more encroachment on the forests of the Terai.

2.2 Master Plan for Forestry Sector

The Master Plan for the Forestry Sector (MPFS, 1989), prepared between 1986 and 1988 and approved in 1989 provides a 25-year policy and planning framework for the forestry sector. The long-term objectives of the Master Plan for Forestry Sector include the following:

- to meet the people's basic needs for forest products on a sustained basis
- to conserve ecosystems and genetic resources
- to protect land against degradation and other effects of ecological imbalance
- to contribute to local and national economic growth

The Master Plan for the Forestry Sector guide's forestry development within the comprehensive framework of six primary and six supportive programs to achieve its objectives.

2.2.1 Primary Forestry Development Programmes

1. Community and private forestry
2. National and leasehold forestry
3. Wood-based industries
4. Medicinal and aromatic plants
5. Soil conservation and watershed management
6. Conservation of ecosystems and genetic resource

2.2.2.Supportive Forestry Development Programmes

1. Policy and legal reforms
2. Institutional reforms
3. Human resource development
4. Research and extension
5. Forest resources information system and management planning
6. Monitoring and evaluation

The main feature of the Master plan is an integrated and programme-oriented approach. The idea to employ a program approach to support these six primary program and six supportive programs was a turning point in Nepal's history of forestry sector policy.

2.3 Eighth Five-Year Plan (1992- 1997)

The National Planning Commission has incorporated the policies of the Master Plan for the Forestry Sector (1989), into the Eighth five-year Plan (FY 1992/93 - 1996/97).

The basic objectives of the Eighth Five-Year Plan for the forestry sector included:

1. Stabilise the supply of timber, fuelwood, fodder and other forestry products necessary for the general people in their day to day lives.
2. Increase the productivity of forest products to ensure the supply of raw materials to forest-based industries, which contribute to the national economy.
3. Increase income from and employment opportunities in the forestry sector for underprivileged families.
4. Develop national parks, wildlife reserves and protected areas in order to preserve biological diversity, to maintain ecological processes and ecosystems, and to create recreational areas.
5. Help maintain land fertility through the conservation of soil and other watershed resources.

The following policies have been adopted to achieve the Eighth Five-Year Plan for the forestry sector:

1. Public participation will be intensified through the implementation of private forestry, leasehold forestry and users' group-based community forestry programs;
2. Deprived sections of the society will be given preference when land is allocated for leasehold forestry so that their opportunities for employment are increased.
3. The private sector will be encouraged to sell forestry products.
4. The development of industrial forestry will be emphasised in appropriate areas.
5. To reduce conflicts between local residents and national parks and reserves, the people will be allowed to help manage national parks. In addition, to restore the people's faith in national parks and reserves, a share of the fees generated will be spent on developing neighbouring rural areas.
6. Public participation in the prevention and control of soil erosion will be encouraged.

2.4 Ninth Five-Year Plan (1997-2002)

The Ninth Five-Year Plan (1997- 2002) followed the Master Plan for the Forestry Sector policy in order to continue its main thrust of peoples' participation in forest management practices. The main objective of Ninth Five-Year Plan is Poverty alleviation through providing economic opportunities for poor people and encouraging their participation in development activities. To reduce poverty effectively in the long run, poverty-focused sectoral and targeted programs will be launched in a co-ordinated, integrated and effective way. In addition, the Ninth Plan for the forestry sector emphasises the need to cultivate non-timber forest products in community forests and to promote employment and income-generating opportunities for poor and marginal families.

The main objectives of Ninth Five-Year plan for the forestry sector include:

1. Mobilise, conserve and manage forest resources to reduce the gap between demand and supply.
2. Create income-generating and employment opportunities for poor and marginal families.
3. Mobilise local people to enhance productivity.
4. Adopt proper land-use practices.

The main policies and strategies which have been adopted by the Ninth Plan to achieve its objectives include:

1. The local users will be encouraged in the efforts to fulfil the day-to-day needs for timber, fuelwood, fodder and other forest product. A regular supply will be ensured through community forestry development.
2. Support to poverty alleviation will be provided by promoting and establishing participatory forest management and by implementing community based development activities.
3. Conservation of the Siwalik area will be carried out in order to maintain the renewal capacity of the groundwater reserve by giving priority to soil and water conservation programmes.
4. The management, marketing, industrial development processing and export of herbs and forest products will be supported.
5. The private sector will be encouraged by providing the opportunity for the commercial management of government-owned forests in areas with potential.

2.5 Forestry Sector Legislation

Forestry legislation used to be formulated to resolve past problems related to protection rather than to meet present and future needs for better management and increased production. As a result, legislation, which included several major acts and their associated rules, was not in accordance with the spirit of the new forestry sector policy, which was arrived at through the master planning process. This discrepancy was particularly noticeable in the case of community forestry. Policy is now very clearly oriented toward "people's participation" in contrast to previous legislation such as the Forest Act of 1961, which originally aimed to prevent (the villagers) from entering forests. Other early forestry laws are identified below.

1. The Forest Protection Special Act of 1968 and the Forest Products (Sale and Distribution) Rules of 1971 strictly regulated people's rights to forest products.
2. The Panchayat Forest Rules and the Panchayat Protected Rules of 1978 allowed communities to manage barren or degraded lands for forest production. These rules needed improvement before they could effectively promote community forestry in the spirit of decentralisation.

3. The Leasehold Forest Rules of 1978 allowed only barren or very degraded areas to be leased. In practice, this policy encouraged the cutting of trees so that a lease for the area could be applied for.
4. The Private Forest Rules of 1984 entitled owners of private forests to a free supply of planting materials and to technical assistance from the District Forest Offices provided their forest was duly registered.
5. The National Parks and Wildlife Conservation Act of 1973 defines a national park and provides for three other kinds of reserves: strict natural reserves for scientific studies only, wildlife reserves (in effect similar to national parks), and hunting reserves. His Majesty's Government of Nepal (HMGN) may, "if it so deems necessary," declare any area to be a part of a park or reserve, and may take over the ownership of any area so declared. This act and the rules made under it aim to protect wildlife and control hunting, but they have not been successfully enforced. Thus, in 1994 an additional provision for the establishment of conservation areas and buffer zones was made.
6. The National Parks and Wildlife Act was amended so that the revenues of a national park would be shared with the local communities located within the buffer zone surrounding that park.
7. The Soil and Watershed Conservation Act of 1982 allows HMGN to declare any area as a protected watershed. This act has been implemented to manage Shivapuri watershed area.

The preceding policies are now being implemented under the Forest Act of 1993 and the Forest Rules of 1995. The act and its regulation are a result of past experiences which demonstrated that people's participation is necessary for the management of forests. The act and rules, however, does require periodic revision as the implementation of forestry resource management proceeds. The Forest Act of 1993 and the Forest Rules of 1995 aim to develop the forestry sector through decentralisation and the participation of individuals and groups.

2.6 Other Relevant Legislation

Legislation augmenting the role of the Department of Plant Resources and defining its position within the forestry sector is still required. Rules governing land use planning are also needed.

The Land (Survey and Measurement) Act of 1963 indirectly hinders forestry development because forestland is defined as government land. In fact, its provisions encourage people to cut down trees so that the piece of land on which they stand can be unambiguously claimed as private.

The Pastureland Nationalisation Act of 1974, which is applied selectively, vests the ownership of all pasture lands in HMGN. Local village and district committees are required to "protect and improve" pasture lands and "must not use the land for any other purpose".

Among the public utilities laws that affect forestry include the Public Roads Act of 1974, which deals with the acquisition of land for the protection of roads; the Irrigation; Electricity and Water Resources Act of 1967; the Electricity Rules of 1969; and the Canal Management Rules of 1974.

3. Basis of New Policy Formulation

Because of the long tradition of five-year plans, a policy formulation mechanism is already in place. However, delays in translating policies into programmes and then into legislation and thereafter into operational rules and administrative orders are long and exhausting.

The policy of decentralisation in the forestry sector means that national forestry institutions must concentrate on supporting local development efforts. Since the Master Plan of 1989 was adopted, the Panchayat form of local government has been replaced by democratically elected local governments. Under various laws formulated to promote local governments, including the Decentralisation Act of 1982 and the Local Government Act of 1992, and the recommendations of the high-level Decentralisation Committee Report of 1996, district development planning has become an important responsibility of local governments. In the forestry sector, district forest officers are required to work closely with local governments to develop and implement forestry activities. The land-use criteria recently approved by His Majesty's Government ensure the preservation of the present forest cover of the country.

The present ecological and land-use policies embodied in the periodic plans are well intentioned, but still lack appropriate institutions and mechanisms to ensure their implementation. In addition, these policies need to be simplified and brought into line with other forestry sector related policies.

Nepal's planning process represents a novel compromise in its attempt to combine local participation in development planning with national-level strategy, co-ordination and budgetary control. The Decentralisation Act of 1982 and the framework outlined by the High Level Decentralisation Committee Report of 1996 require each local government unit to draw up a development plan. Such plans are then used as the basis for the preparation of district plans. The National Planning Commission is responsible for co-ordinating these district plans and when necessary adjusting them to ensure their consistency with national policies and guidelines. The legislation for environmental protection (the Environment Act of 1995) has been enacted and subsequent regulations have been formulated. This legislation provides legal measures for the conservation of environment, the prevention and control of pollution and also provides the legal authority to develop regulatory measures for the conservation of biodiversity, and sustainable and equitable benefit-sharing by using genetic resources. Unfortunately, the institutional capability to enforce and monitor the implementation of this legislation appears quite limited.

The Ministry of Forests and Soil Conservation (MFSC) has a key role to play. In this regard, an Environment Division with a strong Biodiversity Section has been established in the Ministry of Forests and Soil Conservation. A National Biodiversity Steering Committee with representation from all the concerned line ministries has also been established within MFSC; thus effort has required the co-operation of all other concerned Ministries.

4. New concept of forest management of Terai, Churia and Inner Terai

According to a recent survey (1998), the estimated annual depletion rate of forests in the Terai is 1.3% and in the mountains including shrubland is 0.2% , overall the national average of forest depletion was 0.5% during the period from 1978/89 to 1993/94. It is estimated that the annual economic loss from the deforestation is eleven billion Nepali rupees per year. This situation shows that there is still good deal of pressure on forests especially those in the Inner Terai and Terai. The depletion of forests causes serious problem including declining agricultural productivity and environmental degradation. In order to check the depletion of forest resources to improve conservation, and practice management in a sustainable way, the His Majesty's Government of Nepal introduced a proposal for a new concept in managing the forests of the Terai, Churia and Inner Terai on May 1, 2000. The proposal is ideas include the following.

1. Contiguous large block of forests now existing in the Terai and the Churia hills will be delineated, gazetted and managed as national forests.
2. A collaborative forest management system, following natural processes, will be applied to improve forest and biodiversity.
3. Since the present stock of timber in Timber Corporation of Nepal (TCN) depots and the collection of fallen trees from forests and settlement areas is able to fulfil the present demand, green trees as such will not be felled for commercial purposes, at least for next five years.
4. The barren and isolated forestlands of the Terai, inner Terai and the Churia hills will be made available for handing over as community forests. A Community forest operational plan will be prepared and forest product will be utilised based on annual increment and prescribed guidelines relating to the marketing of forest products.
5. The Churia hills will be managed as a protected forest. They are geologically very fragile and moreover, they absorb rainwater and recharge ground-water for the Terai.
6. The sustainable management of forests in the Terai, the Churia hills and inner Terai requires participation. Committees established for this purpose receive fuelwood and fodder free. In addition, 25% of the income of the government-managed forest will be provided to local governments (VDC and DDC) to implement local development activities. The remaining 75% of the income will be collected as government revenue .
7. As the main objective of community forests is to fulfil the basic needs of local communities for fuelwood, fodder, and small timber, 40% of the earnings from timber sales from the Terai, Siwaliks and Inner Terai will be collected by the government for program implementation when surplus timber is sold by community forest users' groups.

5. Development Imperatives and Policy Objectives

5.1 Development Imperatives

Soil, water, flora and fauna constitute the main elements of forestry. Together with other biotic and abiotic factors these elements help sustain biodiversity. Long-term development can be socially, economically and ecologically sustainable only if it caters adequately to the following imperatives:

5.1.1 Satisfaction of Basic Needs

Peace and stability, which are preconditions for national development, can be maintained only if the basic needs of the people are satisfied. In this connection, the forestry sector, by developing and implementing well-organised programs, can play a major role in meeting people's needs for forestry products and in improving the lives of rural people. The Ninth Five-Year Plan approach paper emphasises that effective conservation and utilisation of forestry resources can be enhanced by encouraging people's participation in forestry programs, by establishing users' group-based community forestry, by promoting private forestry, by involving underprivileged groups in leasehold forestry, and by implementing community development activities around the peripheries of protected areas and government-managed forests. In this way, the basic need for fuelwood, fodder and medicinal plants will be satisfied and local economies enhanced.

5.1.2 Sustainable Utilisation of Forestry Resources

Forest resources are a gift of nature and are bound by the laws of nature. They are also the heritage of our children, and must be managed for the future. The importance of the present generation's requirements must not outweigh the importance of conservation. If the carrying capacity of a forest is continually exceeded, its productive base will eventually collapse. In fact, such breakdowns are occurring in many parts of the country.

Forestry resources will last in perpetuity only if they are conserved, wisely managed, and used in such a way as to maintain their productive capacity. It is essential to protect and manage forests in order to conserve biodiversity and genetic resources, to protect watersheds, to prevent soil erosion, and to provide a sustained supply of forestry products.

5.1.3 Participation in Decision-Making and Sharing Of Benefits

An excessive concentration of decision-making power in the higher echelons inhibits the enthusiasm and self-reliance of the people. In addition, opportunities to misuse power are created and people's suspicions are aroused.

The immense energy and numerous resources of the people can be released and mobilised into constructive management activities through participatory forestry programs. When decision-making power is given to the users who most depend on the forestry resources in question, the decisions made have a good chance of actually

being implemented. The users can be motivated to rationalise their land and forestry use only if they themselves benefit from better management of the resources, improved harvesting methods and from their afforestation efforts. Benefit sharing and grassroots decision-makings are fundamental factors in the sustained development of the country's land and forestry resources.

5.1.4 Socio-economic Growth

To strive for a better future is a universal goal of humankind. Even if basic needs are satisfied, the peace and harmony of a nation is endangered in the long run if there are no prospects for improvement. This is especially true in developing countries like Nepal.

The numerous resources of the forestry sector must be exploited in ways which provide maximum benefit to both the local and the national economies. Special attention must be paid to the poorest segments of society.

It must be stressed that the above four points are imperatives, not options. If any one is disregarded, the entire forestry sector policy may fail, and sooner or later this failure will produce disastrous consequences - environmental, ecological, economic, social, cultural, and political.

6. Objectives of the Forestry Sector Policy, 2000

6.1 Long-term Objectives

- To meet the people's basic needs for fuelwood, timber, fodder, and other forestry products on a sustained basis
- To contribute to food production through effective interaction between forestry and farming practices.
- To protect land from degradation by soil erosion, floods, landslides, desertification, and other ecological disturbances.
- To both conserve and use in a sustainable way biological diversity and genetic resources for the maintenance of prevailing ecosystems.
- To contribute to the growth of local and national economies and thereby to improve the quality of life of the people by managing land and forest resources, developing forest-based industries, and by creating opportunities for income-generation and employment.

6.3 Medium-term Objectives

- To promote people's participation in land and forestry resource development, management, and conservation.
- To improve the legal framework needed to enhance the contribution of individuals, communities, and other organisations to land and forestry resource development, management, and conservation.
- To improve and strengthen the organisational framework and the institutions of the forestry sector so that they can better perform their missions.

6.4 Short term objectives

- To provide increased opportunities to the people for forestry resource management under the community, private and leasehold forestry programs as well as the biodiversity conservation program provided for in the new forestry legislation.
- To manage the natural forests of the Terai and Inner Terai more effectively in order to contribute towards the socio-economic development of the country.
- To continue to strengthen institutions and legislation, including the development of clear operational guidelines for those entrusted with administering forestry sector legislation in line with the program approach in the forestry sector.

7. The Forestry Sector Policy, 2000

The policy statement of 2000 for the forests of the Terai, the Churia hills and the Inner Terai provided explicit management options for the forests in the hills and mountains of these region. It has also given recognition to the Agricultural Prospective Plan (APP), Master Plan for the Forestry Sector (MPFS), and the Nepal Environmental Policy and Action Plan (NEPAP), all of which pay special attention to the management forests in the hills and the Siwaliks. The National Biodiversity Action Plan will provide a broad framework for developing a comprehensive work plan for forests, Protected Area System (PAS), wetlands, mountains and agriculture.

In the following policy statements, His Majesty's Government presents the guidelines for the legal, institutional, and operational development of the forestry sector. This forestry sector policy is especially important in that it provides a framework for the systematic implementation of the various development programs in the sector.

7.1 Land Use Planning

Land use planning will be introduced in order to enhance the productivity of the resource base and for striking a balance between the conservation and the sustainable use of natural resources. As changes in land-use categories reduce productive capacities and result in environmental degradation, the cultivation of forest, shrub and grassland will be forbidden. Existing landuse categories will be improved to their full potential so that productivity is increased and the forestry sector developed.

7.2 Conservation of Biodiversity, Ecosystems, and Genetic Resources

Biodiversity conservation will receive high priority to ensure both security and a sustainable livelihood for millions of people living in the eastern Himalayan region. Species, their interactions, and the ecosystems they inhabit are the essential elements for creating biodiversity. A landscape planning approach to managing biological diversity on an ecosystem basis will be initiated.

In order to conserve forests, soil, water and biodiversity while at the same time meeting the basic needs of the people on a sustainable basis, land and forestry resources will be managed and utilised according to their ecological status. Representative examples of ecosystems unique to Nepal and areas of special

scientific, scenic, recreational or cultural value will be protected. In order to provide a systematic and strategic approach to biodiversity protection in Nepal, in accordance with the Convention on Biodiversity, 1992, in line with Nepal's existing initiatives in commitments to and responsibilities for conserving biological diversity, the need of and constraints to biodiversity protection will be identified. Ecological balance will be maintained and biodiversity conserved for the well-being of the nation. To accomplish these goals, the environmental impacts of development programs will be evaluated. In cases where the national interest conflicts with local interests, any adverse effects on the local people will be minimised and compensated for.

Tourism in protected areas will be regulated and kept within the carrying capacity of the local ecosystems. Part of the income from tourism will be made available for community development.

His Majesty's' Government of Nepal will adopt a National Biodiversity Action Plan (NBAP) in the year 2000 to provide an operational planning framework to conserve biological diversity, maintain ecological processes and systems, and to ensure the equitable sharing of benefits.

7.3 Production and Utilisation

The forestry resources of Nepal will be managed and utilised in a manner which gives priority to the production of products which best meet the basic needs of the people. The priority products are fuelwood for cooking, timber for housing, fodder for domestic animals, and medicinal plants for health.

Forests in the hills will be managed with the users' participation. The primary task of a government field worker will be to assist, advise and facilitate households in their efforts to manage and utilise the forests on a sustainable basis. Promoting the establishment of permanent users as managers of forestry resources will gradually eliminate the present uncontrolled use of forestry products. The ancient right of the people to collect fuelwood and fodder will be regulated accordingly to the decisions and management plans of the users. The villagers themselves will thus defend their property against illegal exploitation.

Forests in the Terai and the Siwaliks of high economic and national importance will be managed and utilised by implementing management plans and by strictly following the plan's prescriptions. Collaborative partnership with the households living adjacent to such forests will be established. Legal provision will be made for sharing the revenue. The supply of forest products, especially wood to urban areas, in the cash economy will be intensified by promoting the production of these products in national forests, on farms and commercial plantations. Especially in suitable parts of the Terai the production, processing and marketing of non-wood forest products will be encouraged.

7.4 Social Aspects of Land and Forestry Resources

A holistic approach to the multiple use of land will be taken up by blending forestry management with biodiversity conservation and community development activities. Emphasis will be placed on integrated farming for strengthening soil conservation and watershed management, for research, extension, and agroforestry, and for other activities related to the forestry sector policy of 2000.

The principles of decentralisation will be applied in the forestry sector through community forestry, which, according to the Forest Act of 1993 and the Forest Rules of 1995, has priority over other forest management strategies. Priority will be given to underprivileged communities, or to the underprivileged people within a community.

7.5 The Role of the Private Sector

Establishment of private forests, herbal farms, and wildlife ranching on private land will be encouraged. Similarly, the establishment and development of forests on leasehold government land will be promoted as long as such forests are socially acceptable. As always, the involvement of the private sector and non-governmental organisations will be continued in forestry development activities.

Parastatals will be required to compete with private enterprise on an equal footing, and required to pay market prices for forestry products. New forest-based industries will be established only if their plans for the production and acquisition of raw materials are acceptable to the Ministry of Forests and Soil Conservation.

7.6 Investment in the Forestry Sector

The forestry sector policy and its programs demonstrate the importance of the forestry sector in the overall context of national development. Accordingly, the forestry sector will be recognised as one of the priority sectors for planning and investment. His Majesty's Government (HMG/N) will solicit Cupertino and assistance from all concerned parties, including donor agencies and international financial institutions, to implement the forestry policy and to finance the forestry sector programs. Preference will be given mainly to grant assistance, particularly for community-based resource management and supportive development programs. Funding which supports international training and the purchase of equipment to improve the capability of forestry professionals will also be welcomed. Loan assistance will however, be considered and accepted for productive forestry programs. Similarly, joint ventures with the private sector to implement commercial forestry operations in suitable forests of the Terai will be encouraged.

The Forestry Sector Co-ordination Committee (FSCC) of the MFSC, which is comprised of representatives of donor agencies, international institutions and relevant government agencies of HMG/N, will continue to work closely together to co-ordinate programs and develop guidelines for program implementation and to mobilise necessary financial resources. The FSCC will foster closer ties and co-operation among the funding agencies, and between the agencies and the MFSC.

8. Classification of forests and protected areas

For the purpose of conservation and management, forests and protected areas are classified as indicated below.

Forests

All forests except those designated otherwise are national forests. They are divided into the following categories.

Government Managed forests. National forest areas managed by His Majesty's Government using approved forest management plans.

Community forests. A part of national forest which are handed over to users' groups as community forests to conserve, manage and utilise for their basic local needs.

Leasehold forests. Forests on land that has been leased by central or local government agencies to private owners including individuals, co-operatives, institutions, and commercial firms.

Religious forests. Forests belonging to religious institutions.

Private Forests. Forests or trees raised and managed on privately owned land.

Protected Areas. A National forest declared by HMG/N as a protected forest pursuant to the Act of 1993, which considers it have a special environment or scientific or cultural importance.

Conservation Areas. Land such as national parks, reserves, protected areas, or other categories gazetted under the National Park and Wildlife Conservation Act of 1973.

Protected Watersheds. Any land under public or private ownership designated as a protected watershed under the Soil and Watershed Conservation Act of 1982.

9. Strategies

9.1 A Mixture of Strategies

Because of the complexity of the forestry sector, a holistic approach is needed to translate the above policy into administrative and management actions. The policy issues are multidimensional and interrelated, and therefore require a mixture of strategies. Although strategies are normally selected to complement each other, in some cases they may compete. In such situations, national leaders should seek guidance from the policy statement in order to orchestrate the development efforts of the forestry sector.

9.1.1 Strategies for Land Use Planning

Adhere to the Principles of Land Use

- Ensure land use planning is an integral part of ecosystem management for the sustainable development of land and forestry resources.
- Use development and physiographic regions as the areas for land and forestry sector development and for biodiversity conservation.
- Adopt the categories of land use formulated in 1986.
- Update land use maps and forest resource information.

Ensure the Sustainable Development of Land and Forestry Development

- Develop and implement land and forest resource development programs based on the concept of land use planning.
- Provide measures for the conservation of land and forest resources.
- Encourage people's participation through effective conservation education and through extension activities including communication and demonstration. Use people-centred planning processes to increase the availability of public land and to best serve the interests of the people.
- Utilise resources only after taking into account environmental repercussions.

9.1.2 Strategies for Production and Utilisation

Increase the Production of Fuelwood, Timber, Fodder and Non-Wood Products

- Promote community forestry by entrusting forest protection and management to user's groups and by supporting and empowering them.
- Monitor forest biomass productivity frequently by inventorying forests. Fuelwood, fodder, timber, medicinal plants and other non-wood products all require attention.
- Promote private forestry by encouraging plantation on farms and other private land.
- Promote agroforestry techniques like the intercropping of fruit trees with medicinal and aromatic plants as well as other multiple land-use techniques adopted to various farming systems as well as to commercial plantations.
- Identify areas which produce surpluses beyond community needs and therefore could be leased to farmers' groups or forestry based industries.

- Promote commercial plantations, especially in the Terai.
- Designate, delineate, and manage government-managed national forests in a scientific way.
- Intensify the management of the existing accessible forests in accordance with the provisions of the Forest Act of 1993 and the Forest Rules of 1995.
- Give priority to community forest management and to government-managed forests in the allocation of research and development resources.
- Base livestock management on the amount of fodder production and highland pasture so as to improve forest management and increase the production of fodder by community efforts.
- Conduct research on multipurpose trees, bamboo, shrubs, medicinal and aromatic plants, and grasses, in order to identify improved stocks for planting.
- Systematically allocate more development resources to areas deficient in forest products.

9.1.3 Provide For Effective Harvesting and Distribution

- Promote the involvement of the private sector in the controlled harvesting and distribution of wood and other forest products.
- Streamline the pricing policy of forestry products from national forests in order to generate revenue for forest development and management.
- Eliminate restrictions on the internal trade and transport of timber and fuelwood within all priority areas.
- Promote an internal market system in order to meet the demands of priority areas.
- Export forestry-based products once they are processed and finished.

9.1.4 Reduce Consumption

- Conduct research on, develop, and promote the adoption of alternative energy sources such as natural gas, biogas, bioenergy, and solar, hydroelectric, and wind power in Cupertino with agencies responsible for the production and supply of energy.
- Use mature trees efficiently. Encourage the maximum utilisation of wood by an improved pricing system based on the "replacement value" of forest and trees.
- Promote the adoption of efficient, energy-saving cooking stoves.

- Demonstrate and advise villagers on basic house construction which uses economic designs and reasonable specifications for timber.
- Establish facilities such as low-cost rope ways and paths that ultimately reduce the consumption of forest products.

9.1.5 Improved Pasture and Livestock Management

- Immediately design an integrated national forage development program and an appropriate institutional arrangement for its implementation in order to complement the Master Plan for the Forestry Sector and the Agriculture Perspective Plan.
- Co-ordinate research on and development of farming systems.
- Improve breeds in order to increase productivity and control livestock populations to reduce demands for feed.
- Support stall-feeding with financial aid and extension services.

9.1.6 Strategies for the Conservation of Ecosystems, Biodiversity, and Genetic Resources

Improve Legal And Institutional Arrangements

- Develop legislation in accordance with the National Conservation Strategy (NCS), National Biodiversity Action Plan (NBAP) and others plans in order to enforce the sustainable management of land resources; to protect natural resources such as soil, water, flora, fauna, and scenic beauty; to maintain the ecological balance; and to conserve biodiversity.
- Amend legislation to implement new a policy for the Terai, the Churia hills and the Inner Terai, especially to conserve forests in the Churia.
- Establish and empower a ministry for implementing environmental programs which safeguard the lives and property of people.
- Provide the MFSC with the legal authority, manpower and other resources needed to fulfil its mandate to look after the national interests in the sustainable use of natural resources and in the protection of the environment.
- Extend appropriate soil conservation and watershed and wildlife management activities to all parts of the country through the existing field units of the MFSC.

Educate Public about Nature Conservation and Forestry

- Introduce a compulsory course in nature conservation to the curricula of all school classes.
- Educate teachers, journalists, political leaders, government officials, staff of non-governmental organisations, and the general public through publications, broadcasts, seminars, workshops, field trips, etc., organised and promoted by the MFSC.
- Provide extension activities and vocational training for farmers to encourage proper land use and the consequent reduction of pressure on land resources.

9.1.7 Strategies for Social Aspects of Land and Forestry Resources

- Adhere to the decentralisation policy by entrusting, the protection, management, and utilisation of forests to users and supporting and empowering them.
- Gradually hand over all accessible hill forests to local communities to the extent that they are able and willing to manage these forests.
- Formulate simple management techniques and specialised programs for the Siwaliks region in order to conserve the ecosystem as well as to meet the demands of the local people.
- Entrust users with the task of protecting and managing forests. Allow users to receive all of the income, which they must spend primarily on forest improvement and development, including the cost of hiring forest watchers. Extra income may be spent as the community determines.
- Encourage communities to grow commercial forest crops where appropriate growing conditions exist and to establish forest-based processing enterprises outside of the community forest.
- Emphasise extension activities aimed at gaining the confidence of the woodcutters and others, particularly women, who make forest management decisions daily. Encourage the maximum involvement of women members in users' committees.
- Formulate simple management agreements as quickly as possible in order to expedite the handing over of forests to users and to regulate harvesting so that it meets the demand on a sustainable basis in the long run.
- Periodically improve management plans on the basis of experience and new data from field studies. Emphasise socio-economically viable management systems.
- Reforest depleted forests to fill production gaps.
- Retrain the entire staff of the MFSC for their new roles as advisers and extension workers.

9.1.8 Focus on Providing Livelihood to Poor and Landless People in Forestry-Related Activities

- Employ the poor and landless in nursery, plantation and management work, construction, forest harvesting, and forest-based industries.
- Train individuals, provide financial support to establish private nurseries, and purchase their products.
- In allocating leasehold forests, give people below the poverty level priority, but only encourage them to engage in forestry if the benefits will exceed the costs. Avoid the policy of "poor land to poor people".
- Employ the poor and landless on government and leasehold forest plantations, including those using agroforestry techniques.
- Initiate programs and incentives to establish and manage tree farms on leasehold forestland for industrial and multiple-use purposes.
- Pay a just income to the rural poor who collect raw materials like medicinal and aromatic plants for industries based on such forest products.

9.1.9 Strategies to Promote Private Involvement in Forestry Development

Consolidate the Resource Base

- Reduce the land tax on private land used for the plantation of forest species.
- Extend the land-holding ceiling for private land which is used for forest production.
- Provide financial support to private nurseries and plantations at low-interest rates.
- Extensively distribute seedlings and other planting materials at reasonable prices.
- Disseminate information and provide extension activities, training, and education.
- Conduct research on and develop alternative and fast-growing species suitable for agroforestry.
- Eliminate restrictions on the internal trade and transport of forest products.

- Relax import regulations on essential commodities such as matches, plywood, and paper during the period required to establish the raw material base and industrial capacity for Nepal to produce these commodities in an adequate supply.
- Make parastatal organisations compete with private enterprise on equal terms.
- Conduct surveys and assessments of resources and markets for timber and non-timber forest products.

9.1.10 Develop Industry

- Make low-cost financing available to forest-based industries for their renovation, improvement, and expansion, and for the installation pollution-control facilities.
- Liberalise the import of raw materials for forest-based industries.
- Support technical and vocational training.
- Conduct researches on and develop logging and transport technology.
- Identify, produce and process herbs and other non-timber forest products.
- Pass regulations discouraging the export of unprocessed products and encouraging the export of high value-added products.
- Promote the commercialisation of non-timber forest products.

9.1.11 Strategies for Investment in the Forestry Sector

Prioritise the Forestry Sector and its Programs

- Prioritise the forestry sector as one of the crucial areas for government planning and financing for national development.
- Continue the forestry master planning process, prioritise development programs, and allocate the financial resources of the Ministry of Forests and Soil Conservation to priority areas.
- Continue the FSCC as a forum for the discussion of policy analysis, planning, and program implementation on a priority basis among forestry sector donors and officials of HMG/N.
- Establish the capabilities for an effective project analysis, planning, and evaluation at the MFSC. Prepare and implement priority projects and programs.
- Support technical and vocational training and conduct research on prioritised forestry programs and operations.
- Assess and update the status of resources periodically.

9.1.12 Create an Environment Conducive to Investment

- Solicit grant assistance for programs that are supportive and/or implemented with people's participation. Mobilise such funds for international training and the purchase of equipment to improve the capability of forestry professionals.
- Accept loan assistance for only those productive forestry programs which are economically feasible.
- Reorient the FSCC to better co-ordinate the activities of the forestry programs; to provide a mechanism for sharing information about forest development issues; and to identify and recommend ways to harness potential internal and external resources for forestry sector development programs.
- Encourage private sector investment including joint ventures in implementing commercial forestry operations in suitable forests of the Terai.
- Do not intervene in the internal trade, transport or pricing of forest products, but do liberalise the import of raw materials for industrial purposes.
- Make parastatal organisations compete with private enterprise on equal terms.

10. Strategies for Policy Implementation

To facilitate the integration of biodiversity considerations into national and sectoral planning with a greater flexibility

- Develop a comprehensive strategy that co-ordinates various stakeholders in wildlife, forestry, tourism, agriculture, and community development to prioritise the conservation needs of the country.
- Depute the human resources of the Ministry of Forests and Soil Conservation to priority areas.
- Plan for and rapidly implement community forestry according to the principles of decentralisation.
- Allocate more human resources to productive technical forestry work than to formal administrative tasks.
- Continuously monitor and evaluate the targets and achievements of the programs of MFSC at different organisational levels.
- Continuously improve working techniques and strategies by systematic research and development.
- Develop clear job descriptions and work plans, and then develop systematic staff training programs.

Improve the Policy, Legal, and Institutional Framework

- Implement a forest policy that ensures the optimum use of natural resources in the present, but at the same time preserves the potential of those resources to benefit future generations.
- Adopt a policy to help improve the life of poor people who earn their livelihood from the forests or from cultivating sub-marginal land.
- Continue the master planning process while updating policy and making legal and institutional arrangements.
- Reorganise the existing institutions in order to make them capable of implementing the proposed programs efficiently and effectively.
- Finalise recently started the reorganisation of the MFSC in order to meet the challenges of the decentralisation policy and to fulfil increasing production targets.
- Ensure the functional integration of research and development in the departments of the MFSC so that each benefits from co-operation and firm leadership.
- Strengthen the different district and regional level organisations of the MFSC. Delegate to them full authority to conduct silvicultural and all other field operations.

Train Sufficient, Motivated and Competent Manpower

- Use target-oriented planning to develop manpower that can and will assume the responsibilities of the forestry sector.
- Give manpower and training needs priority when launching development programs and organising systematic orientation training.
- Optimise the use of national campuses and the institutions of friendly countries.
- Radically improve the training capabilities of the MFSC and university-level forestry and environmental education.
- Provide vocational training in forest management, harvesting, and the processing of wood-based products.
- Implement an active, objective and just personnel policy, which includes strict enforcement of the criteria fixed for transfers and for nomination to long-term training programs.
- Gradually increase the income of the staff of the MFSC so that a reasonable standard of living can be attained. Income should include salary, substantial allowances, and other post-related benefits.
- Create a strong work ethic in all segments of the sector.

Prioritise Development Programs, and Institutionalise Adaptive Management and Action Research

- Define the criteria which determine priority
- Implement the Master Plan programs, continue the master planning process, and review priorities.
- Establish effective planning, monitoring and evaluation capabilities at selected organisational levels in the MFSC. Prepare and implement district forestry development plans promptly.
- Concentrate the research and development resources of the MFSC on determining and serving priority needs with an emphasis on action research and adaptive management.
- Establish a regular mechanism of co-ordination and co-operation with which to prioritise and monitor development programs.
- Utilise Geographic Information System (GIS), remote sensing and other high-tech approaches for instituting an effective management information system.

Encourage the Participation of Villagers, local Government Bodies and Non-Government Organisations as Collaborators

- Widely disseminate information on forestry development programs.
- Educate consumers about the proper and economic utilisation of forest products.
- Support the private sector in the production of tree seedlings and in planting and forestry development activities.
- Establish demonstration areas.
- Ensure that local people benefit if they protect natural forests or plantations.
- Involve political parties and mass organisations in forestry development.
- Involve DDCs and VDCs as partners in collaborative forest management in the Terai and the inner Terai.
- Actively encourage and involve non-government organisations to help implement forestry development programs.
- Review the incentives and disincentives to increased participation in forestry programs.
- Encourage local ownership and management of forestry resources.

- Monitor the policy implementation with a view to bringing improvements to the implementation of forestry sector programs.
- Analyse regularly the forestry sector policy and suggest improvements.
- Ensure that the policy is in line with HMG/N policy and national planning processes.

11. Programs to Implement the Forestry Sector Policy, 2000

Institutional Responsibilities

The MFSC is responsible for monitoring the implementation of its policy. In its annual plans, the MFSC reports to the National Planning Commission on how policies have been applied in the field and how problems are being tackled. A complete, updated policy statement is presented in each Five-Year Plan.

Policy co-ordination among sectors is the responsibility of HMGN, and especially of the National Planning Commission. The MFSC initiates any necessary changes in legislation, and implements them in the field. The Master Plan for the Forestry Sector is then regularly updated to provide a holistic framework for systematic development.

Institutional Arrangements

The policy is implemented by formulating development programs. An organisational set-up in which functional responsibility is entrusted to various hierarchical levels helps to implement programs efficiently. Equally necessary is the issuance of legislation conducive to the implementation of each of the programs. Furthermore, it is of utmost importance that the right person is appointed to the right position, and that each position has the authority to function at its full potential. Finally, the appropriation of sufficient financial resources guarantees effective program implementation.

12. Programs of the Master Plan

The Master Plan has identified six primary and six supporting development programs to implement the forestry sector policy.

12.1 Primary Development Programs

■ Community and Private Forestry

Aims to develop and manage forestry resources through the active participation of individuals and users' groups who work to meet their basic needs.

■ **National and Leasehold Forestry**

Aims to develop and manage national forests through government agencies or through leases to the private sector, and to complement community and private forestry.

■ **Development Of Medicinal and Aromatic Plants and Non-wood Products**

Aims to increase the supply of medicinal and aromatic plants and other non-wood products, and to facilitate their conversion into useful commodities and their distribution to local and foreign markets.

■ **Development of Wood-based Industries**

Aims to facilitate the conversion of wood into commodities needed by the people, and to contribute to economic development through industrialisation.

■ **Soil Conservation and Watershed Management**

Aims to protect land from degradation and conserve its value through the mobilisation of national and local resources.

■ **Conservation of Ecosystems and Biodiversity**

Aims to protect special areas for the value of their ecosystems and biodiversity as well as for their provision of amenities and to promote the *ex-situ* conservation of plant and animal genetic resources.

12.2 Supportive Development Programs

■ **Policy and Legal Reform**

Aims to develop the policy and legal framework necessary to facilitate and enhance the contributions of individual people, communities, and institutions.

■ **Institutional Reform**

Aims to strengthen the organisational framework of the sector so that program implementation is more efficient and effective.

■ **Human Resource Development**

Aims to develop the capability of the personnel in the sector to implement forestry development programs and operations.

■ **Forestry Research and Extension**

Aims to strengthen the research and development capability of the forestry sector and to promote the utilisation of the results of research through demonstration, extension and public information.

■ **Resource Information and Planning Assistance**

Aims to develop a forest resource information system within the MFSC which is capable of generating surveys, inventories, and other information, and of processing management information for use in management planning and project formulation by the government and the private sector.

■ **Monitoring and Evaluation**

Aims to institutionalise a system for monitoring forestry development operations and their impacts and for processing various data into useful information to further guide development.

13. The Policy and Legal Reform Program

HMGN has already taken the first step in legal reform by enacting the Forest Act of 1993 and by promulgating the Forest Rules of 1995. Further actions now needed include:

- Providing uniform guidance to the individuals, institutions, and organisations which implement policy.
- Standardising practices in field operations. Ensuring that the most urgently needed activities are given priority.
- Promoting mutual confidence in the relations among government agencies, communities, and individuals involved in the development process.
- Enacting an act and rules to define the role of the Department of Plant Resources.
- Formulating rules for the management of buffer zones and the implementation of community development activities.
- Enacting an act and rules governing land- use planning.

14. Cost of the Forestry Sector Development Programs

Table 2: Financial Requirements of the Forestry Sector during the Planning Period from 1992-2010 (Millions of U.S. Dollars, constant 1998 prices)²

		9FYP 97-02	10FYP 02-07	11FYP 07-12	Total	%
Total cost		414.0	504.5	626.8	1867.0	100.0
Breakdown by program:	Community and private forestry	187.3	259.4	337.0	909.6	48.6
	National and leasehold forestry	83.1	116.8	149.9	400.5	21.4
	Development of wood-based industries	17.6	16.6	17.7	75.3	4.0
	Development of industries based on medicinal and aromatic plants and non-wood forest products	25.9	11.6	13.1	76.8	4.1
	Conservation of ecosystems and genetic resources	27.9	27.3	29.5	112.9	6.0
	Soil conservation and watershed management	37.5	38.3	41.7	154.1	8.2
	Policy, legal, and instit. Reform	0.7	0.6	0.6	2.6	0.1
	Human resources development	21.1	21.3	24.1	84.7	4.5
	Forestry research and extension	8.4	8.6	8.6	34.6	1.8
	Resource info. and planning	4.0	3.3	3.2	3.4	0.6
	Monitoring and evaluation	1.4	0.9	0.9	5.0	0.3
Breakdown by item:	Investment	<u>164.1</u>	<u>142.5</u>	<u>150.5</u>	<u>621.4</u>	<u>33.2</u>
	-Office infrastructure	10.5	4.0	0.9	29.1	1.5
	-Office transport/equipment	9.0	8.6	9.0	35.2	1.9
	-Miscellaneous. Development	117.6	104.8	115.3	449.6	24.0
	-Technical assistance	21.4	18.5	17.5	82.7	4.4
	-Fellowship/training	5.6	6.62	7.8	24.7	1.3
	Recurrent	<u>200.8</u>	<u>299.3</u>	<u>397.0</u>	<u>1021.1</u>	<u>54.6</u>
	-Salaries/allowances	71.9	81.4	94.4	306.7	16.4
	-Office maint./oper. Expenses	36.1	40.4	46.4	153.1	8.2
	-Forest maintenance	92.8	177.5	256.6	561.3	30.0
	Physical contingency	<u>49.0</u>	<u>62.6</u>	<u>79.3</u>	<u>227.4</u>	<u>12.1</u>
Breakdown by type:	Local	343.4	446.2	566.2	1603.0	85.7
	Foreign	70.6	58.2	60.6	266.9	14.3
Breakdown by source:	HMGN	142.0	176.4	214.9	642.0	34.3
	Private sector	136.5	218.6	301.6	729.8	39.0
	External assistance	135.4	109.5	110.2	498.2	26.6

15. Policy Impacts and Economic Viability³

The economic, socio-economic, and environmental impacts that have been projected as a result of implementing the programs of the Master Plan for Forestry Sector Policy of 1989 are:

² Reformulated from the MPFS of 1989 and adjusted to the present five-year planning periods. The actual investment allocated in the Eighth Plan was US \$ 9,00,0000 against the estimated investment of US \$ 324.7 million.

³ Source: Master Plan for the Forestry Sector of 1989.

15.1 Economic and Socio-economic Impacts

Increased Fuelwood Production

If the programs of the Master Plan of 1989 are implemented, fuelwood production will increase from 7.3 million tones in 1985-86 to 10.8 million tones in 2000-01 and to 16.3 million tones in 2010-11. In comparison, the current trend will result in the production of just 9.2 million tones of fuelwood in 2000-01 and 12.2 million tones in 2010-11. The plan will increase fuelwood production by 1.6 million tones in 2000-01 and by 4.1 million in 2010-11. The difference in production in 2010-11 is worth Rs.8973 million at current prices, assuming that fuelwood deficits are met by importing kerosene, or Rs.3607 million in terms of forgone maize production of 951,000 tonnes, assuming that dung and agricultural residues are used as fuelwood substitutes rather than as fertiliser.

Increased Timber Production

Under the Master Plan, sustainable timber production will increase from 0.88 million cubic meters in 1985-86 to 1.64 million in 2000-01 and to 3.48 million cubic meters in 2010-11. In comparison the current trend of timber production suggests there will be only 1.36 million cubic meters in 2000-01 and 2.21 million in 2010-11. At current prices, the difference in timber production of 1.27 million cubic meters in 2010-11 will be worth Rs.4547 million.

Increased Fodder Production

Under the Master Plan, sustainable fodder production from forest land and tree farms will increase from 14.6 million tonnes of fresh matter in 1985-86 to 18.2 million tonnes in 2000-01 and to 24.3 million tonnes in 2010-11. In comparison, the corresponding fodder production, according to the current trend, will be just 16.0 million tonnes in 2000-01 and 17.5 million in 2010-11. The difference in fodder production of 6.8 million tonnes in 2010-11 could support an additional 2.7 million buffaloes, which in turn could produce 2.1 million tonnes of milk worth Rs.10870 million, and 2.67 million tonnes of dry dung. If used as fertiliser, the estimated additional dung production could raise maize production by 316,000 tones, which is worth Rs.1199 million at current prices.

Increased Income

The above estimated increases in fuelwood, fodder, and timber production in 2010-11 means an increase in income of Rs.23, 900 million at current prices.

Greater Employment Opportunities

Employment predicted to result from the implementation of the Master Plan is equivalent to 2.5 million person-years of full-time jobs in 2010-11, as opposed to the 1.7 million person-years projected using the current trend.

Land Use

The development programs proposed will have only a marginal effect on agricultural land use and on the area of agricultural land per capita. Whatever additional land the forestry sector makes available for agriculture will be overshadowed by the increase in population, so that cultivated land per capita will continue to decrease to 0.12 ha. in 2010-11.

The development programs proposed will also have a minimal effect on the land ownership structure. However, if we consider the government land placed under the control of rural people who benefit from community forestry and private forestry programs, an additional 1.8 million ha. of land, or 0.09 ha. per capita, will be under the management and control of rural people in 2010-11.

Quality of Life

The quality of life of rural people, especially those belonging to the lower income groups, will improve as a result of the increased availability of fuelwood for cooking and heating; more feed for livestock, which in turn will provide more milk, meat, hides, and dung; more timber for shelter; increased security from natural disasters because of better soil cover and more erosion control structures; and more amenities from the protected areas.

15.2 Environmental Impacts

The overall aim of implementing the Forestry Sector Policy of 1998 is to improve the management of the country's forestry resources, and thereby balance the needs of the people, the production systems, and the environment. The programs will have substantial positive impacts on the environment: forest cover on degraded areas will be restored; exploitation of natural forests will be controlled by local people to their own benefit; natural forests will be managed; soil conservation will be promoted; the network of national parks and wildlife reserves will be protected and maintained; biodiversity will be conserved; and the people will be made aware of the need to balance their needs for forest products with the ability of ecosystems to supply these needs.

An examination of the programs for implementation subsumed by the Forestry Sector Policy of 1998 reveals no expected adverse environmental impacts. In fact, the entire Master Plan is an environment-friendly development plan.

Careful project design and responsible monitoring, however, are needed to mitigate any adverse effects of forest-based industries. The small size of such industries means that their negative impacts will be small, but it also means that they cannot afford expensive environment-friendly equipment. Financial support, utilisation of appropriate expertise, and disallowance of production units that are too small to be able to safeguard the environment will help to control any adverse effects.

15.3 Economic Viability

The forest establishment and management schemes proposed under the Forest Policy of 1997 are all economically viable. A better mechanism for resource allocation will ensure that soil conservation structures are constructed only in those areas where the socio-economic benefits cover their costs.

An economic internal rate of return (EIRR) has been estimated for the Master Plan as a whole. Only those programs which deal with the production of fuelwood, timber, and fodder were considered to be profitable. Supportive programs such as human resource development forest resource information and management planning, research and development, and forestry extension were all included as expenses. All investment and recurrent costs, including physical contingencies, but excluding duties and taxes, were taken into consideration in estimating the EIRR.

The analysis was carried out using 1988 constant border prices. To convert the prices of internationally traded commodities to local currency, an exchange rate of Rs.25.4 to one US dollar was used (on December, 1997 the exchange rate was Rs. 63 to one US dollar).

- The EIRR resulting from the implementation of the above mentioned programs of the Master Plan is 36%. Its sensitivity to changes in costs and benefits has been determined. Incremental costs would have to increase by over 2.5 times, or incremental benefits drop to less than 40% of their estimated value for the EIRR to fall to 12 percent.